

## **Business Simulation Laboratory Design Proposal**

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### **Abstract**

The design proposal for implementing a Business Simulation Laboratory intends that students experience management decision-making and its consequences in organizations, encouraging their competitive capabilities through technological tools. This experience will directly impact any area in which professionals work in the future since business simulation provides an enriching experience at a practical level within an environment free of natural risks, thus strengthening the graduate profile of the Business Administration Career at the Escuela Superior Politécnica de Chimborazo. The proposal development began with an exhaustive search of previous research on the creation of this type of laboratory, followed by interviews and conversations with specialists from different areas of the institution, in addition to the business simulation professors, both individually and as a group. An academic environment designed exclusively to recreate the different business scenarios contributes significantly to an organization's labor and interpersonal relationships. Furthermore, this study allows putting into practice students' theoretical knowledge through teamwork and strengthening management skills, thus achieving a comprehensive education as it shows the coordination between the different activities and processes in a public or private institution.

**Keywords:** Simulation, business, business, enterprise, decision, laboratory

### **Resumen**

La propuesta de diseño para la implementación de un Laboratorio de Simulación de Negocios pretende que los estudiantes experimenten la toma de decisiones gerenciales y sus consecuencias en las organizaciones, incentivando sus capacidades competitivas a través del uso de herramientas tecnológicas, lo que repercutirá de manera directa en cualquier área en la que se desempeñen como profesionales, ya que la simulación de negocios brinda una

experiencia enriquecedora a nivel práctico dentro de un entorno libre de riesgos reales, fortaleciendo así el perfil de egreso de la Carrera de Administración de Empresas de la Escuela Superior Politécnica de Chimborazo. Para el desarrollo de la presente propuesta se inició por una búsqueda exhaustiva de investigaciones previas sobre la creación de este tipo de laboratorios para posteriormente realizar entrevistas y conversatorios con especialistas de diferentes áreas de la institución, además de los profesores de simulación de negocios, tanto a nivel individual como grupal. El contar con un ambiente académico diseñado exclusivamente para recrear los diferentes escenarios empresariales que se dan en la realidad aporta significativamente en las relaciones laborales e interpersonales que se producen en una organización, lo que permite poner en práctica los conocimientos teóricos de los estudiantes a través del trabajo en equipo, fortaleciendo las habilidades gerenciales, logrando así una educación integral ya que se evidencia la coordinación que debe existir entre las diferentes actividades y procesos que se dan en una institución pública o privada.

**Palabras clave:** Simulación, negocios, empresa, decisión, laboratorio

## Introduction

In the evolution of the education curriculum, the influence of competencies is undeniable as part of socio-economic integration, locally, regionally and globally, where students learn to put their knowledge into practice to deal with complex situations of professional and everyday life (Roegiers, 2016).

In Latin America, it is essential to achieve comparable and relevant degrees with excellence based on the reality of each country. In the Tuning methodology for Latin America, there are 27 generic and 20 specific competencies (Esquetini *et al.*, 2013). The generic competencies most valued by employers of business administrators are commitment to ethics and quality, theoretical and practical capacity, and the ability to identify, raise, solve problems and work in teams. The competencies considered most important are exercising leadership to achieve organizational goals, using cost information for decision making, developing strategic, tactical and operational planning, and interpreting accounting and financial information for managerial decision-making (Sanabria *et al.*, 2019).

According to technological advances, the methodologies implemented in the different educational systems have adapted to the new needs and social and labor demands. As a result, games are a fundamental part of teaching and learning at the educational level. For example, in the case of Business Administration, the inclusion of business simulators constitutes a learning strategy that allows students to improve their decision-making capacity by managing a virtual company through the incorporation of business games, thus improving their administrative and managerial skills while developing their teamwork capabilities (Vásquez and Fajardo, 2017).

For Benítez *et al.* (2017):

“Through the use of simulators, the student faces an active reinforcement of learning by participating in the experience of improving his possibilities in the explored field, adopting skills and identifying and annulling his weaknesses to correct and perform more efficiently in the working world. This effectiveness has been proven to the extent that the student can exercise reciprocity in achieving knowledge, regulating the practice of the organization in terms of decision execution times, movement within the simulated platform, the different

scenarios that arise, what factors are available and what are the limitations posed in each of the specific areas” (p. 127).

Using a business simulation laboratory, students will practice their theoretical knowledge, shortening their limitations, improving their management skills and strengthening their assertiveness in decision-making in any business area where they will have to work as professionals. In addition, it is of utmost importance that educational institutions integrate teacher training programs that include accompaniment, monitoring and evaluation of results (Mancilla *et al.*, 2021). Although simulators are promoted in this type of organization, teachers must increase their participation in this type of event (Schlottmann *et al.*, 2020).

The Business Administration career promotes the implementation of the Business Simulation Project to strengthen the teaching and learning processes, especially in management decision making and to contribute to the development of research and degree works in the area of administrative, economic and financial sciences.

Business simulators, also called business simulators or business games, are computer programs that allow students to manage a virtual company or business, applying the previous knowledge acquired in the different subjects of their academic training and integrating it for decision-making. Therefore, the business simulator is a dynamic training tool, extremely useful for students' academic development since it allows them to understand their role as future professionals (Ruiz and Ruiz, 2013). Furthermore, in the curriculum, it has been shown that the use of simulators strengthens the competencies of a specific domain in different disciplinary fields (Alfonso *et al.*, 2020) since simulation platforms or systems integrate specialized modules, which contribute to a teaching-learning process, according to the structure of the study plans and programs of the economic and administrative area.

To date, the Business Administration Career does not have a Business Simulation laboratory, which allows the strengthening of the student's capacities in the financial area and decision making, and in linkage and research activities. The business simulators create motivation and healthy competition within the classroom and the institution since they compete among the same group, with others of the same career or a different one, even worldwide, which generates high competition among students knowing the best practices and what not to do or avoid. Moreover, it is adjusted to the new competency models since students will have to analyze, interpret, create mathematical models and synthesize information to make decisions.

Having a specialized business simulation laboratory will make it possible to promote business skills internally and externally, where decision-making and teamwork will demonstrate the ability to analyze administrative, economic and financial indicators, as well as the cohesion and commitment of the different actors involved in the simulation process.

For Cantero (2015):

“Business simulators reinforce meaningful learning since their use is based on observing, modeling and executing plans and theorems in a simulated world, but applicable to their context. It allows students to play various roles within the organizational environment and thus broaden their outlook by participating as a manager or director of one area or another and seeing the impact or significance of their decisions in different areas of the company” (p. 105).

The students' first contact with the business world, the awareness of the consequences of decision-making in an organization, which can be favorable or even critical for the operation of a company; thus facilitating expertise and continuous improvement in management skills through feedback and updating of knowledge in areas such as Administration, Production Plant, Logistics, Finance, Accounting, Marketing, Customer Service, Advertising and Promotion, Finance, Strategic Planning and General Management, among others.

According to Murillo *et al.* (2018):

“Considering that the use of Business Simulation laboratories could become an appropriate methodological practice in the teaching-learning process that university education should implement with the objective that the student associates what is learned in the classroom to a practical case through a hypothetical business environment. One of the characteristics of simulators is that the student learns to live from his mistakes and successes in making business decisions. The student understands the effect of external variables on his industrial sector and allows him to analyze and perceive the opportunities and threats presented to him, as well as to detect the strengths and weaknesses of his organization in a tangible way” (p. 218).

Creating a specialized laboratory for Business Simulation will strengthen the professional profile of Business Administration students for the development of academic activities, graduate work, research and technology transfer.

## **Methodology**

The development of this proposal began with a literature review in repositories such as Scielo, Redalyc, and Latindex, among others, where the lack of topics on the design of a Business Simulation laboratory was evidenced. However, publications were found in which the fundamental concepts and the benefits of using a laboratory of this type as a teaching and learning methodology in higher education, specifically in the area of Business Administration, were detailed.

An exploratory study was carried out through unstructured interviews based on five guidelines: strengthening the professional profile, hardware and software equipment, furniture, the security system to be implemented and the physical space. The three professors who teach the subject of Business Simulation in the School of Business Administration of the Escuela Superior Politécnica de Chimborazo participated, and this allowed to gather first-line information about the advantages and the actual application of business simulation software as a fundamental part of the professional profile of future graduates in Business Administration. The interviews were conducted using two parameters, the first being the determination of the physical environment conducive to simulation activities and the second being the technological environment necessary for the operation of the simulator.

Two technical specialists in the computer area of the faculty and three representatives of the Department of Information and Communication Technologies (DTIC) were also interviewed for the integration of the laboratory into the institutional network and the endorsement for the acquisition of computer equipment. In addition, three members of ESPOCH's Directorate of Maintenance and Physical Development (DMDF) were also interviewed to establish the feasibility of the proposal's design regarding physical infrastructure and furniture.

The interviews were conducted personally with the members of each work team through videoconferencing using Microsoft Teams. This allowed the participants to interact freely, emphasizing the specific needs and competencies of each of the participating groups, to subsequently implement six general meetings of a virtual discussion type among all those involved, which allowed for fine-tuning details, complementing and unifying ideas that served as the basis for the development of this proposal.

## 4. Results

In the joint meetings held with the specialists in the different areas, the requirements for each of the established guidelines were determined through interviews and subsequent discussions, resulting in the following:

**Table 1.** *Analysis of the curriculum*

SUBJECT	CONTENTS SYLLABUS
Accounting I	Accounting Process Financial Statements Merchandise Registration System Tax Obligations and Fiscal Taxes in Ecuador
Accounting II	Accounting treatment of the statement of financial position accounts Accounting treatment of income statement accounts
Cost Accounting	Production order costing systems Production Process Costing Systems Interpretation of the statement of costs and financial statements for decision making
Financial Mathematics	Interest and compounding
Financial Analysis	Analysis and interpretation of financial statements
Financial Administration	Financial tools
Production Management	Localization strategies Forecasting and inventory management
Operations Research	Linear Model Network Optimization Models
Audit	Decision theory Internal control Development of the audit
Business Simulation	Strategic Analysis with BSC Management of a Company with simulators
Macroeconomics	Aggregate supply and demand Measurement of economic activity
Microeconomics	Economic policies Consumer theory Production theory
Management skills and decision making	Cost theory Development of management skills
Strategic business management	Business Coaching Internal and external factor evaluation matrix
Budget Administration	Direct labor planning Expense planning

**Source:** *Business Administration Career Curriculum*

**Source:** *Own elaboration*

### ***Strengthening the Professional Profile***

After conducting interviews with teachers specialized in business simulation and after analyzing the curriculum of the Business Administration program, the subjects strengthened by the implementation of the Business Simulation laboratories are:

### ***Equipment***

In the meetings held jointly with the business simulation professors, the technicians of the faculty laboratories and the representatives of the institution's DTIC, the technological needs were determined; at the hardware level, it was established that the computers to be acquired should contain an i9 processor, thus allowing for equipment with less affectation of programmed obsolescence. At the software level, it was specified that the company providing the business simulation software should offer training to the teachers who will teach the subject, including continuous online support and follow-up and updating services, offering a wide range of simulators that provide different levels of complexity, thus strengthening the professional profile of the students of the Business Administration course, as shown in Table 2.

**Table 2.** *Equipment*

<b>Quantity</b>	<b>Description</b>
1	Business Simulator License
6	Interactive Whiteboards
6	Laser projectors 4100 lumens
	Computers
7	Core i9X processor (8 cores)
	1TB solid state hard drive
	Memory 32GB
1	Speakers
7	UPS
1	Audio system with microphone

**Source:** *Interviews and discussions*

**Source:** *Own elaboration*

### ***Furniture***

In addition, Table 3 presents the essential mobilization for the equipment assembly.

**Table 3.** *Furniture*

<b>Quantity</b>	<b>Description</b>
6	Work tables with built-in outlets, including voice point and network point.
1	Desk
30	Chairs
1	Swivel chair
2	Mobile Boards
1	Dumpster
1	Air conditioning system
1	Curtain

**Source:** *Interviews and discussions*

**Source:** *Own elaboration*



### *Security System*

It is vital to have a security system that guarantees the adequate safekeeping of the acquisitions made by the institution. For this reason, the following requirements were determined:

**Table 4.** *Safety system.*

<b>Quantity</b>	<b>Description</b>
1	Ds-2cd2045fwd-i fixed camera 4mp
1	Access, time and attendance controller with video fingerprint reader + proximity, ds-k1t501sf
1	Exit button do not touch
1	Metal pushbutton
1	Electromagnetic lock 600 lb zk
1	L and Z bracket for electromagnetic wall locking system
1	U-bracket for electromagnetic lock (glass door)
1	Power supply 12 vdc 5amp
1	32 Ch Nvr ds-9632ni-i8 (recorder)
1	Hdd purple surveillance 10tb

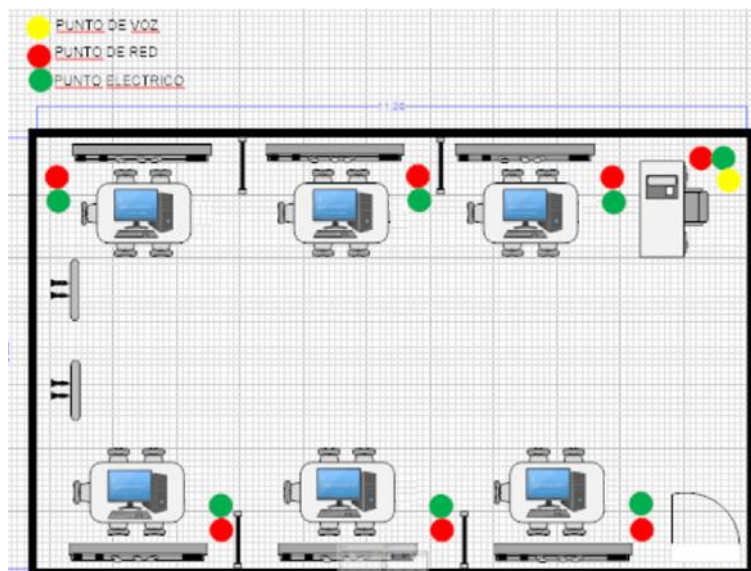
**Source:** *Interviews and discussions*

**Prepared by:** *The authors*

### *Physical Space*

It was agreed that the simulation laboratory would require two mobile blackboards and six workstations containing a table, five chairs, a computer and an interactive screen for each team of no more than five students, thus guaranteeing the effective participation of its members. In addition, a desk, a chair, and a computer are required for the teacher. For the design of the space for student activities, it is considered appropriate to place room dividers for each workstation to maintain a certain level of privacy in the different activities, which will have an electrical point and a network point. Mobile whiteboards will be located at the back of the laboratory, available in case they are required by both the students and the teacher. In addition, the space for the teacher's use should contain a voice point to facilitate academic activities.

The physical space for implementing the Business Simulation Laboratory is 12 m long by 6 m wide. It will be located on the second floor, based on the approved design for the construction of buildings as specified by the institutional DMDF, the same that will be part of the block of laboratories of the Faculty of Business Administration, constituting an essential part of the technological innovation environments for the development of academic, research, liaison and postgraduate activities. The following is a reference image of the location of the workstations.



**Figure 1.** *Business Simulation Laboratory*  
**Source:** *Own elaboration.*

### **Proposal**

After analyzing the results presented above, a proposal for the physical space's design and the technological implementation of the Business Simulation Laboratory is prepared.

#### **1. General Data**

**1.1 Name of the project:** *DESIGN OF A BUSINESS SIMULATION LABORATORY*

**1.2 PROJECT TYPE:** Technological Innovation

**1.3 Sector On Which The Project Will Have An Impact:**

- Human and social development
- Information and communication technology

**1.4 Area Of Research / Linkage: (According To Unesco)**

- Social Sciences
- Engineering and Technology

#### **Knowledge Area**

- 04 Administration, business and legislation
- 06 Information and communication /ICT

#### **Sub Area Of Knowledge**

- 041 Business and Management
- 061 Communication Information

#### **Specific Sub Area**

- 0413 Management and Administration
- 0611 Computer Use

**1.5 Institutional Line Of Research/Linkage**

- Administration and Economics
- Information Technology, Communication



### ***1.6 Project Location***

The design proposal for a Business Simulation Laboratory will be delivered to the Escuela Superior Politécnica de Chimborazo, Business Administration School, Business Administration Career, in the city of Riobamba, province of Chimborazo.

### ***1.7 Type Of Coverage***

This project proposes the creation of a Business Simulation laboratory that constitutes a proposal for the realization of academic activities within a new scenario explicitly created to carry out the administrative management of a virtual company, using available simulators that cover all areas of a company. This allows students to practice their management skills using technological tools and specific simulators that allow working in a specific company area, which helps to improve the capacity for analysis and decision-making in a specific area.

The creation of this teaching and learning space is consistent with the components and methodology to achieve the training goals in the career, since it is considered the realization of training activities that allow the development of critical attitude and a creative ability to find alternatives to solve problems. It is conceived as a strategy to generate knowledge in response to business problems in academic spaces that allow the generation of new knowledge, hoping to achieve in the student the competences of entrepreneurship and leadership, with the application of higher order thinking skills, to help build creative thinking for negotiations through case studies as a technique of qualitative research, simulation of business events accompanied by the use of ICT and specialized software for the management of markets, investment and financing.

In order to achieve these goals, it is intended to develop thinking skills such as comparison and contrast, decision making, induction, deduction, classification and abstraction. Furthermore, to design strategies that motivate business entrepreneurship and leadership with the application of programs that allow integrating and putting into practice the knowledge acquired in the different ordinary academic periods, promoting capabilities for the development of pre-professional practices, and visualizing the importance of a natural business executive environment.

### ***1.8 Executive Summary Of The Project***

Currently, the business system is very competitive; therefore, the entrepreneur must use technological tools to improve productivity and competitiveness. However, the scarce use of ICT within the educational process for business management contributes minimally to the innovation and preparation of students as an added value for developing their professional skills.

With the Business Simulation Laboratory, it is intended that students experience management decision-making and its consequences in organizations, encouraging their competitive capabilities through the use of technological tools, which will have a direct impact on any field they work in as professionals since business simulation provides an enriching experience at a practical level within an environment free of actual risks, strengthening the graduate profile of the Business Administration Career as well as the Mission and Vision of

both the Career and the Faculty and therefore the institution. Furthermore, the implementation of a business simulation laboratory also contributes to the development of research and degree works in the area of administrative and financial sciences.

## 2. Project Content

### 2.1 Background

Article 27 of the Constitution of the Republic of Ecuador establishes that education shall be centered on the human being and shall guarantee his or her holistic development within the framework of respect for human rights, a sustainable environment and democracy. It shall be participatory, compulsory, intercultural, democratic, inclusive and diverse, of quality and warmth; it shall promote gender equity, justice, solidarity and peace; it shall stimulate an acute sense of art and physical culture, individual and community initiative, and the development of skills and abilities to create and work.

The National Development Plan, for the period 2017-2021:

*It is organized into three Programmatic Axes and nine National Development Objectives based on environmental sustainability and territorial development (p.13).*

Considering environmental sustainability and equitable territorial development as fundamental pillars, the first axis, “Rights for throughout life,” guarantees individual, collective and natural rights. The second axis, “Economy at the service of society,” postulates that human beings are above the capital. Finally, the third axis is called “More society, better state” and promotes participatory citizenship with a close state. The challenges now lie in maintaining an inclusive economy that modifies its relative composition to change the productive matrix: an economy that generates high added value while promoting a society with values based on solidarity and co-responsibility (SEMPLADES, 2017).

The following are the Objectives of the Strategic Plan for Institutional Development 2019-2023 of ESPOCH:

- “To strengthen academic quality at the undergraduate and graduate levels with social relevance. Promote scientific research and technological innovation to contribute to local, regional, national and international development.
- Strengthen links with society through the transfer of science and technology, providing services, training, business entrepreneurship, and scientific, environmental, cultural, sports and social activities.
- Consolidate the modernization of institutional management, allowing for efficient fulfillment of the educational mission” (p.9).

Methodological advances in educational systems have evolved. According to the technological progress of the time, the application of business or business games can be used for teaching strategic management through a specific methodology involving students in a complete business environment. Business simulation is constituted as a business learning tool

that combines theory and practice, making business simulation an optimal tool for learning since it allows managing a virtual company by experiencing decision-making in a simulated business environment where economic, financial and administrative aspects must be considered, strengthening and demonstrating their skills for the management of business processes.

Considering that the mission of the Business Administration Career of the Faculty of Business Administration of the Escuela Superior Politécnica del Chimborazo is to train competent professionals in Business Administration with humanistic and scientific criteria, through constant updating in teaching, research and linkage with the community, within a framework of warmth and quality, to contribute to the construction of a more just, productive, innovative society, with profound impact on the regional environment; through constant updating in teaching, research and linkage with the community, in a framework of warmth and quality, to contribute to the construction of a more just, productive, innovative society, with profound impact on the regional and national environment, as well as its sustainable socio-economic development and good living, it is of utmost importance to promote the implementation of a business simulation laboratory, in order to contribute to the development of research and degree work, in the area of administrative and financial sciences.

## **2.2 Justification**

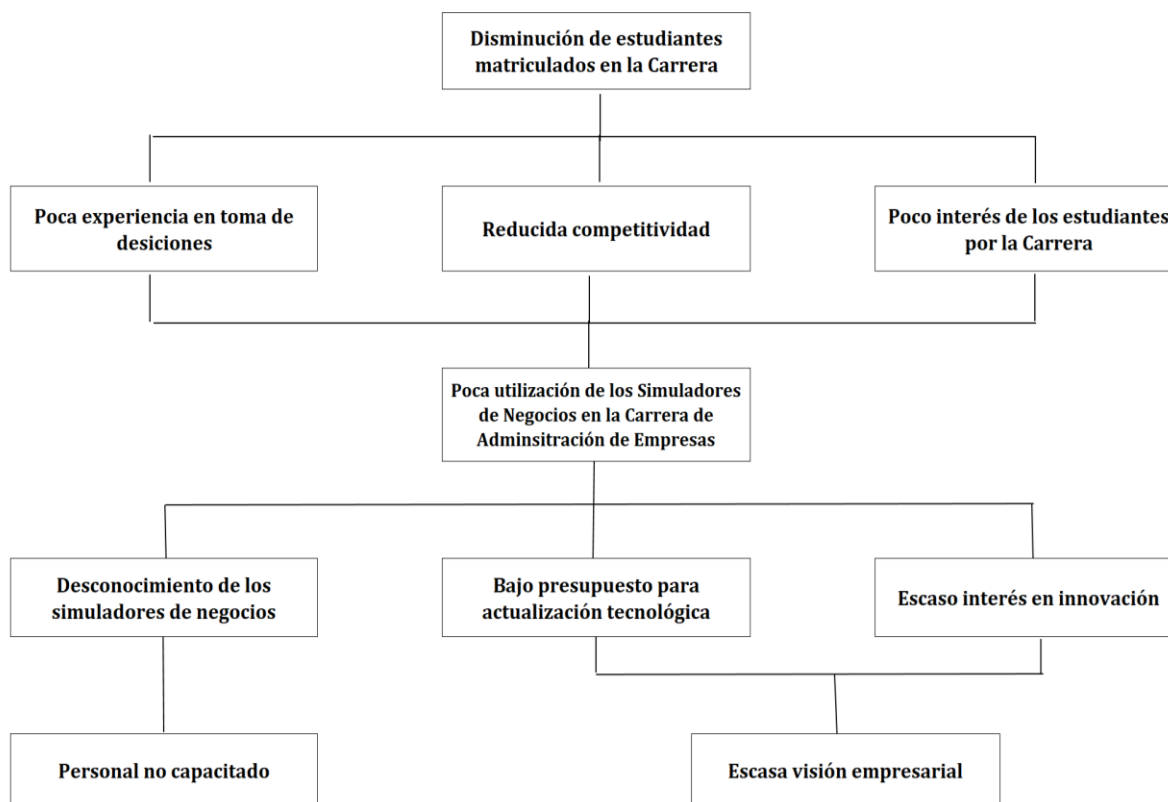
The current business dynamics mean new professionals must strengthen their management skills to facilitate their incorporation into the labor market. Therefore, it is necessary to constantly incorporate new strategies for meaningful learning that focuses on students' autonomous learning, allowing them to demonstrate their strengths and weaknesses in a simulated business environment that allows them to analyze the consequences of their decisions without real risks within an organization.

Business simulation games constitute an ideal educational, and technological tool within the Business Administration Career since it allows the recreation of the processes that take place within a company in the real world, allowing students to apply and develop their managerial skills. Thus, these tools allow the use of new strategies and decision-making each time a new game is started based on previous experiences.

Teamwork is also strengthened since the creation of groups that represent the functions of the different areas of a company allows a better understanding of the integration that exists between the different business actors and their different roles and responsibilities while allowing students to design, implement and evaluate strategies based on the results achieved.

All this simulated environment will facilitate the professionals of the Business Administration Career to understand and analyze the results of the decision-making process within their work experiences based on their previous experiences in the academic environment.

*Problem Tree*



**Figure 2.** *Problem tree*  
**Source:** *Own elaboration*

The project was designed in accordance with the objectives set out in the Strategic Plan for Institutional Development of ESPOCH, which in turn is an administrative tool that is compulsorily articulated to the National Development Plan 2017-2021 called “Toda una Vida” and responds to the provisions of the Polytechnic Statute, the Organic Law of Higher Education, the Organic Code of Planning and Public Finance and the Constitution of the Republic of Ecuador, framed in the principle of quality higher education and internal quality assurance, and budget allocation by the state, as it is framed in the principle of quality and internal quality assurance, the Organic Code of Planning and Public Finance and the Constitution of the Republic of Ecuador, framed in the principle of quality of higher education and internal quality assurance, and budget allocation by the state, since it will determine the policies, programs and public projects, which allow to achieve the institutional strategic objectives.

**2.3 Analysis Of The Current Situation**

The Faculty of Business Administration of ESPOCH currently has 6 classrooms in the computer center with an average of 20 computers per laboratory to support the teaching-learning process of its five careers, showing that the equipment, facilities, desktop computers, internet connections and other devices have already fulfilled their useful life, because in the best of cases they work with the Windows 8 operating system and are equipped with second generation i7 microprocessors (corresponding to the year 2011), with 4 GB of RAM and 500 GB mechanical disks. However, this is currently insufficient for students to have processing capabilities and use of current applications that enable them to receive a quality education.

Additionally, from the analysis of the on-site visits, through checklists, the following diagnosis was made:

- The facilities where FADE's laboratories currently operate were not specifically designed to function as a computer center, which means that there is no adequate distribution of space to allow for fluid circulation, there are no adequate means for extinguishing fires, there are no air ducts, and there are no video surveillance systems in each laboratory to prevent theft.
- The facilities are not independent for each computer center. There are no adequately identified and labeled switches, no short-circuit protections, and no alternate power plant in case of power outages.
- On the other hand, from the analysis of the inventory provided by asset control, it is evident that of the total number of 132 equipment, all have exceeded their useful life, showing that some laboratories have monitors in poor condition and others cannot count on continuous software updates. This makes it challenging to have a good learning environment, thus demonstrating the need for an imminent change in their equipment.
- It is worth mentioning that all the careers of the faculty share the laboratories with around 3,000 students, which generates inconsistencies, and crossing of schedules in each academic period, and their demand is permanent, which makes it impossible for subjects, especially those related to professional practice, to use them.
- A point to consider is that despite having requested technological equipment, some of the careers have been impossible to implement the laboratories because they do not have adequate physical space and technical equipment.
- This shows the need to have properly equipped laboratories that meet quality standards and contribute to maintaining and raising the institutional evaluation indicators for each FADE career.

## **2.4 Objectives**

### **A. General Objective**

Strengthen the professional profile of the students of the Business Administration career through implementing a Business Simulation Laboratory to develop academic activities, degree projects and research.

### **B. Specific Objectives**

- To obtain the project baseline for the definition of requirements and technical characteristics of the laboratory by researching the most widely used technologies on the market in universities and national and international companies.
- To Implement the business simulation laboratory to transfer technology and develop academic, liaison and research activities.
- To conduct training activities to strengthen the professional profile of students and the technological updating of Business Administration teachers based on the use of the Business Simulation laboratory.

## 2.5 Logical Framework Matrix

### Logical framework matrix

Summary Of Objectives	Baseline	Indicators	Sources Of Verification	Assumptions
<b>End:</b>				
Strengthening The Professional Profile Of Business Administration Students Through Technological Innovation	Obtaining And Collecting Information From Business Simulation Platforms	Number Of Students Using The Laboratory To Develop Their Entrepreneurial Skills	List Of Students Enrolled In The Business Administration Degree Program	A) Equipment Safety B) Availability Of Resources
<b>Purpose:</b> To Expand The Spaces For The Development Of Academic Activities, Thesis And Research Work		No. Of Equipment Available For The Development Of Academic, Research And Outreach Activities	Equipment Handover Report	A) That All Business Simulation Software Licenses Are Used By All Students
<b>Component:</b>				
Strengthen The Physical And Technological Infrastructure Of The Business Administration Career As A Contribution To The Academic And Research Development Of The Faculty And Students.	Determine The Number Of Students Benefiting From The Use Of The Business Simulation Laboratory.	By July 2022 The Physical And Technological Infrastructure Of The Business Administration Program Will Be Strengthened By 10%.	Percentage Of Students Using The Business Simulator Labs In The Business Administration Program Training Activity Log	A) Availability Of Resources B) Participation Of Authorities And The Technical Team
<b>Activity 1.</b>				
To Carry Out The Diagnosis And Baseline Of The Use Of The Business Simulation Laboratory In The Business Administration Career.	Data Collection	Until The Month Of March 2022, To Obtain 100% Of The Diagnosis And Baseline	Report Of Advances	A) Availability Of Resources B) Participation Of Authorities And Technical Team
<b>Activity 2.</b>				
Strengthening The Physical And Technological Infrastructure	Progress Report	The Laboratory Will Be 100% Operational By July 2022.	Structure, Functions, Organization Chart	A) Availability Of Resources



<b>Activity 3.1</b> Training Students On The Use Of The Business Simulation Lab	100% Of Qualified Teachers By December 2022	Technical Studies Carried Out	A) Availability Of Resources B) Participation Of Authorities And The Technical Team
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**Source:** *Interviews and discussions*

**Prepared by:** *The authors*

### 2.6 Sustainability

Technological innovation is key to improving economic development, facilitating social inclusion, enabling better environmental protection in companies and making them more competitive and innovative.

Implementing a Business Simulation Laboratory will significantly improve curricular development because it allows the integration of knowledge, training and constant updating necessary in a business world where the proper use of technological resources makes the difference between success and failure. In addition, having experience in the practical understanding of business dynamics makes the difference in job opportunities among future professionals.

### 2.7 Methodology

For the implementation of the Business Simulation Laboratory, an investigation was carried out on the different platforms existing in the market on business simulation, selecting the most used in companies and higher education centers in the world, which are, among others, CompanyGame and Labsag. Subsequently, a comparison was made between their operational advantages and disadvantages in relation to license costs, number of users, teacher training programs, and organization of competitions, among others. Under this scheme, CompanyGame was considered the most viable business simulation e-learning platform because it allows adapting the pedagogical methodology to each educational center's needs and its students' characteristics. Besides, this model strengthens competitiveness, which is reflected in most of the parameters evaluated from the comparative or competitive analysis of the decisions or results of all competitors.

### 2.8 Expected Results

The implementation of the Business Simulation Laboratory will strengthen the knowledge obtained through the application of academic activities that are part of the differentiating curriculum offered by the competency-based model in the Business Administration Career, thanks to the possibility of integrating theory and practice in a safe administrative environment that allows them to visualize the development of activities in a given company and the impact of management and decision making, in addition to the possibility of performing different functions, always within the field of business administration. Furthermore, participation in national and international competitions will provide further practical experience and highlight technology's importance in business competitiveness.

Implementing a Business Simulation Laboratory will improve the development of the teaching-learning process, improve the quality of academic practices, and promote the development of research projects that provide solutions to the problems of the province of Chimborazo and zone 3, mainly.

### **2.9 Transfer Of Results**

The transfer of results will be carried out through a website and social networks of ESPOCH and the Business Administration Career; research activities that generate scientific production may be developed through projects carried out in the Business Simulation Laboratory.

### **2.10 Direct And Indirect Beneficiaries**

#### **Direct**

The target audience for the business simulation laboratory for decision-making is:

- Students of the Business Administration program
- Teachers and Researchers
- National and international students
- Professionals in general

#### **Indirect**

- Civil Society, Public and Private Entities

### **2.11 Impacts**

Several impacts are recognized with the execution of this project. First, the social impact is evidenced in the students' skills that will benefit any sector in which they perform professionally.

The economic impact of the implementation and use of the Business Simulation Laboratory is to provide mechanisms to future professionals in Business Administration to achieve better competitiveness and sustainability in a company since ICTs can transform production processes, increasing the mobility and speed with which they are carried out, reducing costs and facilitating the insertion of companies in the global economy.

## **3. Design And Equipment**

The design of the physical space is shown in graph 1, the equipment in section 2, the mobilization in the table and the security system in table 4.

## **Conclusions**

For the design of the implementation of a Business Simulation Lab, it is essential the participation of specialists in different areas of the institution such as teachers, professionals in ICT and furniture, interior design, architects and engineers.

It is essential to define independently each of the aspects for the design of the business simulation laboratory, such as equipment, both software and hardware, physical space, furniture and security, allowing a complete integration of each of these aspects, thus achieving a good work environment.

It is undeniable that implementing a Business Simulation Laboratory created specifically for this purpose will significantly contribute to strengthening the professional profile of Business Administrators who graduated from ESPOCH.

The updating of technological spaces in institutions, especially in higher education, is an excellent contribution to the training of students since they provide better tools for the working world, making them more competitive thanks to the skills generated in their professional training.

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