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Artículos científicos

Desarrollo de un proceso de capacitación por aplicación mediante el aprendizaje mixto para mipymes en México

Development of a process training for application through blended learning for MSMEs in Mexico

Desenvolvimento de um processo de formação por aplicação através de blended learning para MPMEs no México

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Resumen

En la actualidad el uso de aplicaciones móviles y simuladores juegan un papel muy importante en el proceso educativo, pues permiten desarrollar estrategias, habilidades y actitudes en las personas que lo utilizan y dan oportunidad de mejora para el proceso de capacitación. Por ello, el objetivo de esta investigación fue desarrollar un proceso de capacitación para mipymes que implemente el uso de aplicaciones móviles en entornos virtuales para fortalecer su estructura administrativa y financiera. Para el estudio se aplicó la metodología DCIERC, y se realizó un estudio cualitativo, descriptivo, de corte transversal. Los resultados muestran que el proceso de capacitación y el uso de la tecnología móvil con escenarios virtuales preconfigurados pueden mejorar el desempeño de las mipymes durante sus operaciones reales.

Se infiere, además, que la metodología DCIERC durante la capacitación es un recurso viable, ya que se observa que al contener la teoría y legalidad sobre las actividades o funciones preconfiguradas desarrolladas antes y durante la práctica real fortalecen el aprendizaje y contribuyen al proceso efectivo de capacitación. Esto se debe a que el emprendedor puede aplicar sus conocimientos empíricos o previos relacionándolos con lo aprendido y lo

transpone en un conocimiento efectivo. De esta manera evita incurrir en errores, pues puede evaluar el desempeño de los emprendedores para conocer las discrepancias teóricas y prácticas en el momento de la aplicación de sus conocimientos en las actividades. Además, al hacer una retroalimentación del análisis de la evaluación en su integración promueve la mejora continua y los objetivos empresariales.

Palabras clave: capacitación, aplicación móvil, aprendizaje virtual, desarrollo tecnológico.

Abstract

Currently the use of mobile applications and simulators play a very important role in the educational process, they allow the development of strategies, skills and attitudes in people who use them and provide opportunities to improve the training process, that is why the objective of this research is to develop a training process for MSMEs that implements the use of mobile applications in virtual environments to strengthen its administrative and financial structure, for the study the DCIERC methodology was applied; A qualitative, descriptive, cross-sectional study was conducted; the results show that the training process combined with the use of mobile technology with preconfigured virtual scenarios can improve the performance of MSMEs during their actual operations.

It is inferred that the DCIERC methodology during training is a viable resource, it is observed that by containing the theory and legality on the activities or preconfigured functions developed before and during the actual practice strengthen learning and contribute to the effective training process by making the entrepreneur apply their empirical or previous knowledge relating them to what they have learned and transposes it into effective knowledge, by evaluating the performance of entrepreneurs in order to know the theoretical and practical discrepancies at the time of the application of their knowledge in the activities, by making a feedback of the analysis of the evaluation in its integration promotes continuous improvement and business objectives.

Keywords: Training, mobile application, e-learning, technological development.

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Resumo

Atualmente, a utilização de aplicações móveis e simuladores desempenham um papel muito importante no processo educativo, pois permitem o desenvolvimento de estratégias, competências e atitudes nas pessoas que os utilizam e proporcionam oportunidades de melhoria no processo formativo. Portanto, o objetivo desta pesquisa foi desenvolver um processo de formação para MPMEs que implemente o uso de aplicativos móveis em ambientes virtuais para fortalecer sua estrutura administrativa e financeira. Para o estudo foi aplicada a metodologia DCIERC e realizado um estudo qualitativo, descritivo e transversal. Os resultados mostram que o processo de treinamento e o uso de tecnologia móvel com cenários virtuais pré-configurados podem melhorar o desempenho das MPMEs durante suas operações reais.

Infere-se também que a metodologia DCIERC durante a formação é um recurso viável, pois observa-se que ao conter a teoria e a legalidade das atividades ou funções pré-configuradas desenvolvidas antes e durante a prática real, fortalecem a aprendizagem e contribuem para o processo eficaz de treinamento. Isso porque o empreendedor pode aplicar seu conhecimento empírico ou prévio, relacionando-o com o que aprendeu e transpondo-o em conhecimento efetivo. Dessa forma, você evita cometer erros, já que pode avaliar o desempenho dos empreendedores para saber as discrepâncias teóricas e práticas na hora de aplicar seus conhecimentos nas atividades. Além disso, ao fornecer feedback sobre a análise de avaliação na sua integração, promove a melhoria contínua e os objetivos do negócio.

Palavras-chave: formação, aplicação móvel, aprendizagem virtual, desenvolvimento tecnológico.

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Introduction

Currently, the training process for the development and operation of SMEs is a strategy little used by entrepreneurs. This is revealed by surveys carried out by the National Institute of Statistics, Geography and Informatics (Inegi) (2020), where it is evident that productive, commercial and service MSMEs have problems with the use of technology as they do not have computers or the Internet to carry out Your activities. Some reasons for this situation are costs or lack of knowledge about the use of these means. Furthermore, in some cases, using this type of technology can be considered a luxury or a limitation.

It is unknown, therefore, that training when starting a business is essential to provide a solid and sustainable structure for businesses, which in turn acts as a guide to carry out operations in the best possible way. This can be achieved by seeking guidance from experts, attending entrepreneurship fairs, hiring previously trained personnel, or taking advantage of platforms offered by the Mexican government. However, training is not always prioritized, and this is due to a variety of causes, such as potential associated costs, lack of appropriate trainers, concerns about disruption to business activities, perceived lack of tangible benefits from taking training and the limited supply from public institutions. These challenges are mentioned in a report by the Mexican Association of Secretaries of Economic Development, AC (Inegi , 2019).

This document also points out that, according to the sector of economic activity, only 14.6% of manufacturing companies trained their workers, 11.4% in the commercial sector and 21.1% in the service sector. These figures reflect quite low levels of training, which translates into poor control of business activities and limits the growth, development, economic stability and market presence of these companies. Ultimately, this contributes to a short business life expectancy.

The above agrees with what was indicated by (Inegi , 2021) when it warns that the life expectancy of new organizations varies between 7.2 and 11.4 years, depending on the federal entity, in the period between 1989 and 2019. On the other hand, the SMEs that have exceeded 5 years of life have a life expectancy of 8.9 to 13.3 additional years, according to the federal entity. These results were affected by the covid-19 pandemic, a disease that caused 1.45% of establishments to close between 2019 and 2021 and only 0.81% to be born.

Likewise, since 2005, problems have been identified regarding the lack of training, as shown below:

> The main problems related to the management of SMEs highlight the lack of training and the lack of a culture of innovation and technological development followed by the lack of liquidity, operating costs, lack of competitiveness and quality (Palomo González , 2005, p. 30).

On the other hand, in the process of building, structuring or strengthening a business, entrepreneurs may find themselves with doubts about how to carry out certain tasks. However, sometimes out of fear, shame, or simply a lack of knowledge, they avoid seeking answers, which can lead to complicated situations where they don't know how to address problems.

Furthermore, it is common for entrepreneurs and MSMEs that are already in operation to have started their operations empirically. In many cases, they base their activities on what they have experienced, what they have been told, or what they think they should do. In this regard, Larios Gómez (2016) points out the following:

> The specialization of the company imposes greater demands on technical and business qualifications, with the ability to continuously innovate being a precondition, in particular. The majority of SMEs in Latin America do not have these qualifications. Almost all of these companies are inserted in standardized production areas with low knowledge intensity, where they compete directly with large-scale production and/or with large commercial houses (p. 182).

For its part, the Employers' Confederation of the Mexican Republic (Coparmex) (July 25, 2022) points out that micro and small businesses are the engine of the country's economy, since of the 4.9 million businesses identified by Inegi in 2019 , 99.8% belong to this sector.

With the above explained, the purpose of this work was the creation of a training process for entrepreneurs and MSMEs that allow them to carry out their activities. This process was not limited to the traditional teaching scheme, since it incorporated technology in virtual environments. This involved the creation of applications with predefined simulators with common situations in areas such as purchasing and selling, inventories, relationships with customers and suppliers, among others. The objective is to provide these entrepreneurs and MSMEs with the theoretical, methodological and regulatory bases necessary to better manage their businesses.

The question that guided this research was the following: what is the training process that MSMEs can use to improve their corporate, administrative structure and finances ? From this question, the following hypothesis was formulated: the development of a training process for MSMEs that implements the use of mobile applications in virtual environments will favor the understanding of issues related to administration and finances.

Theoretical framework

For Ramírez Tovar (2020), training "is a process of systematic, planned and permanent activities whose purpose is to strengthen skills and achieve better performance, optimize professional services and achieve a profile that adapts to new job demands" (p. 348). For its part, the (Secretary of Labor and Social Welfare, 2013), in a document published through the Official Gazette of the Federation, points it out as "continuous teaching-learning processes, which encourage the participants to acquire and develop knowledge, abilities, skills and attitudes required to perform productive functions in their work activities, within a company or institution" (p. 2).

For his part, (Pizarro, 2017) points out that training is a concept that should be considered fundamental during the training and life of SMEs by ensuring that they "have the necessary skills for the company to be more productive. A company that trains its staff has updated knowledge available not only within the company, but also has a favorable impact on its environment."

The (Government of Mexico, 2018) also points out that the purpose of training is "to acquire theoretical and practical knowledge, which allows people to update their knowledge and acquire new ones, which strengthens their ability to respond to changes in the environment or their job requirements." Therefore, in its constant search to support the growth and permanence of these entities, it provides events and training offers, as well as documents, sites of interest, multimedia content and pilot projects. In addition, it offers tools, instruments and services for the development and strengthening of businesses (Secretariat of Economic Development, 2018).

In this research, it is considered as a controlled, planned and continuous process that seeks to improve, apply, modify, strengthen and develop knowledge, competencies and skills for a positive change in the performance of functions and operations in the environment that is developed.

b- learning) was also considered , that is, a model that combines virtual and face-to-face teaching, which makes it an important tool for improving the learning process derived from the use of information technology resources (Cedillo Hernández y Velázquez Garcia, 2022).

Likewise, the (Fundación Canal 2020) explains that mixed learning (*blended learning* or *b- learning*) is a type of learning that combines face-to-face education with the use of ICT and various digital tools to create a comprehensive training and development

channel. Some of its advantages are the flexibility of the learning process, the internalization of content, and the elimination of space and time barriers. Furthermore, its effectiveness generates dynamic, updated and updatable learning, and increases virtual and digital interaction, as well as the diversity of content.

A point that should be highlighted is that *b- learning* can promote active learning for those who practice it, as it stimulates the linking of three elements: space, pedagogy and technology.

> On the one hand, it makes it easier to work in different spaces and scenarios, both virtual and real and both in person and remotely; Different digital elements/resources are mobilized that foster the creation of varied and diverse technological scenarios, and on the other hand, a theoretical foundation is available (Cabero Almenara and Marín Díaz, 2018, p. 63).

In a research focused on the use of a simulator in the tourism sector, the benefits of this resource for training were demonstrated, as it was found that the people involved expressed having a significant impact on decision making, as well as minimizing risks. , analyze alternatives and reserve a margin of flexibility. This improved their security, since they were able to demonstrate the knowledge acquired in the classrooms and in the workplace (Alavez Segura *et al*., 2023).

In accordance with the above, Roncancio Turriago and Pinzon Villamil (2020) conclude the following:

> Simulation can be used as an analysis method; It is a methodology that allows the study of the functioning of a real system through observations of the behavior of the simulated system. It allows you to find solutions to many real-world challenges. It allows you to fail again and again, without disturbing the system. It allows you to improve in each iteration thanks to the knowledge previously acquired from previous failures (p. 17).

A study on a training program, designed to be executed on computers and aimed at operation and maintenance personnel, showed positive results in relation to the use of a simulator for training. The benefits were manifested in the reduction of learning times, driven by the advancement of the level of study thanks to the availability and portability of the tool. Likewise, the updating and maintenance of training content in simulated scenarios was highlighted, which resulted in a lower cost compared to in-person training. These findings

indicate that the availability of preconfigured simulators positively contributes to the assimilation of the main process and tasks.

In the early stages of the project, various actions were carried out. In the first, information was collected to develop the system. The second involved the analysis of the process functions, control equipment and main tasks. In the third, the basic competencies that would serve as a training tool for "standard basic knowledge" were determined, through the development of flow charts and instrumentation. The fourth stage focused on the design of specific competencies with the purpose of being training tools for "specific knowledge" related to process control and operation tasks. In the fifth stage, CBT was developed, which provided an objective and graphic view of the process information to serve as a central element of the training. Finally, in the sixth stage, the use of the simulator was applied to a total of 559 workers through preconfigured scenarios (Mining Safety, January 6, 2014).

According to Dessler and Varela Juárez (2011), the training process is structured in 5 stages, as detailed in figure 1. The first stage is the needs diagnosis, where the necessary skills are identified, and it is ensured that the program is appropriate and objectives are established. The second is the didactic design, which includes the compilation of objectives, methods, audiovisual means, description and sequence, as well as the clarity and functionality of the materials and the training manual. The third corresponds to validation, based on pilot results to guarantee the effectiveness of the program. The fourth focuses on implementation, which involves the presentation of knowledge and skills in addition to the training content. Finally, the fifth stage focuses on the assessment of learning, behavior and other results.

Figure 1 . The five steps in the training and development process

1. NEEDS ASSESSMENT
   - Identify specific skills needed to improve performance and productivity.
   - Ensure that the program will be appropriate for the specific education, experience and skill levels of the trainees.
   - Establish training objectives.
2. INSTRUCTIONAL DESIGN
   - Compile training objectives, methods, audiovisual aids, content description and sequence, examples, exercises and activities. Organize these into a curriculum.
   - Ensure that all materials, such as trainer's guides and trainee manuals, complement each other, are clearly written and merge into a unified training program that makes sense in terms of the stated learning objectives.
   - The process generally results in a training manual, which usually contains the trainee's job description, an outline of the training program, and a written description of what the trainee is expected to learn, as well as (possibly) many short self-tests.
3. VALIDATION
   - Present and validate the training in front of a representative audience. Final revisions are based on pilot results to ensure program effectiveness.
4. IMPLEMENTATION
   - When feasible, use a "train the trainer" workshop that focuses on the presentation of knowledge and skills in addition to the training content. The training program is then implemented.
5. EVALUATION
   - Assess trainees' reactions, learning, behavior and/or results.

Note: Each of the elements involved in the training process are appreciated according to each stage.

Source: Dessler and Varela Juárez (2011)

For its part, the University of Chile (2023) proposes a training cycle that consists of five stages, as presented in figure 2. The first stage is called “needs detection”, in which it seeks to identify the needs of training and learning, as well as the required strategies. In the second stage, called “planning”, the training actions are defined, courses are scheduled, plans are drawn up and capacity is established. The third stage, “execution”, involves putting the previously developed plan into practice. In the fourth stage, “training evaluation”, it is considered what can be carried out through surveys to measure the level of satisfaction,

effectiveness, applicability and impact, which allows identifying the degree of compliance with the objectives. Finally, in the fifth stage, "training management", the resources necessary to generate reports are addressed and the degree of achievement of the goals is evaluated.

Figure 2. Stages of the development training process

Note: The stages of the training process are presented. In the first stage, within the needs, long-term institutional challenges and challenges of organizations and functional areas are considered. In the fourth stage, surveys, focus and others are considered . Satisfaction will depend on effectiveness, applicability and impact. In the fifth stage the resources will be financial, logical, computer science, etc.

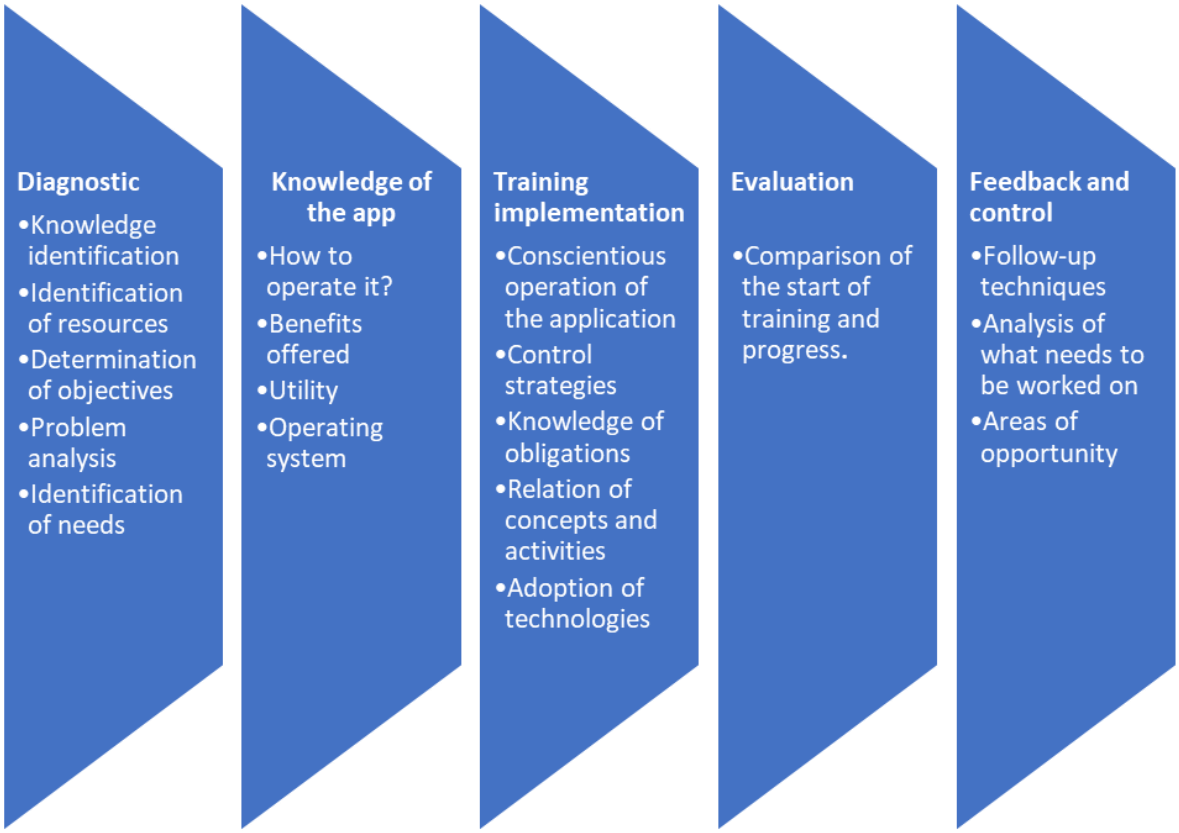
Source: University of Chile (2023)

Methods and materials

This study was qualitative, descriptive and cross-sectional. Specifically, different platforms and documents were reviewed, some of which were discarded because they did not meet the characteristics that support this research, that is, the structural elements of the training process and the need for MSMEs to have this resource.

The main objective of the development and implementation of these elements is to provide support and utility to this economic sector. The idea of a training process through blended learning arose from the review of surveys carried out by Inegi and articles that have highlighted the limitations previously mentioned in the introduction, as well as the short life expectancy of MSMEs. These limitations are considered recurring problems that could be effectively addressed through the use of technology, particularly through the implementation of mobile devices, a constantly growing market at the time of this research. The training process proposed and structured in the application consists of five stages, which are detailed in Figure 3.

Figure 3. Training process by application

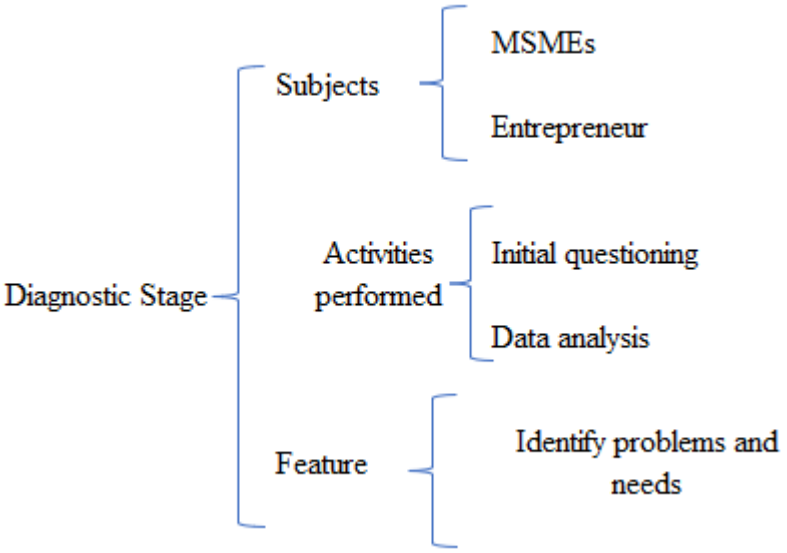


Source: Own elaboration based on Dessler and Varela (2011) and the University of Chile (2023)

Stage 1: Diagnosis

This stage begins with the application of a test (questions), which are made up of items in which the level of theoretical or empirical experiential knowledge is identified. The instrument considers the skills, aptitudes, attitudes, objectives and resources available, as well as administrative, legal and financial knowledge (figure 4). The objective of this stage is to collect as much information as possible to determine the priority needs that must be addressed.

Figure 4. Diagnostic stage procedure



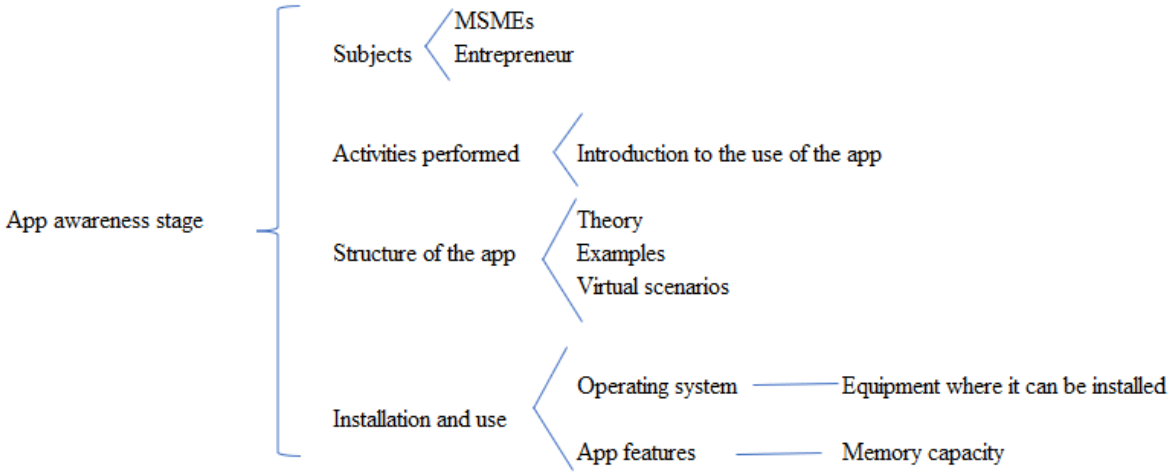
Source: self made

Stage 2: Knowledge of the *app*

At this stage, the entrepreneur or owner of the MSME has the first approach to the application. This is intended for the trainer to provide the tool that will be used as a resource to support and strengthen the training; In addition, the functionality of the tool is explained, designed with theoretical and practical elements, which will confront them with pre-established real scenarios of the operations that support or will support their business. The operating system for which it has been designed is Android, so it can be installed, with the use of an emulator, on smartphones, tablets, *laptops* or PCs.

When using it, data is requested such as the number of workers, the type of business and then it offers a theoretical introduction to the operations and then exemplifies them. Then it presents simulation cases to be solved, as well as the benefits it offers. At the end of its use an evaluation is carried out (figure 5). The objective of this stage is to provide an introduction to how the application works, the expected results, and provide the tool for its installation.

Figure 5. Characteristics of the second phase

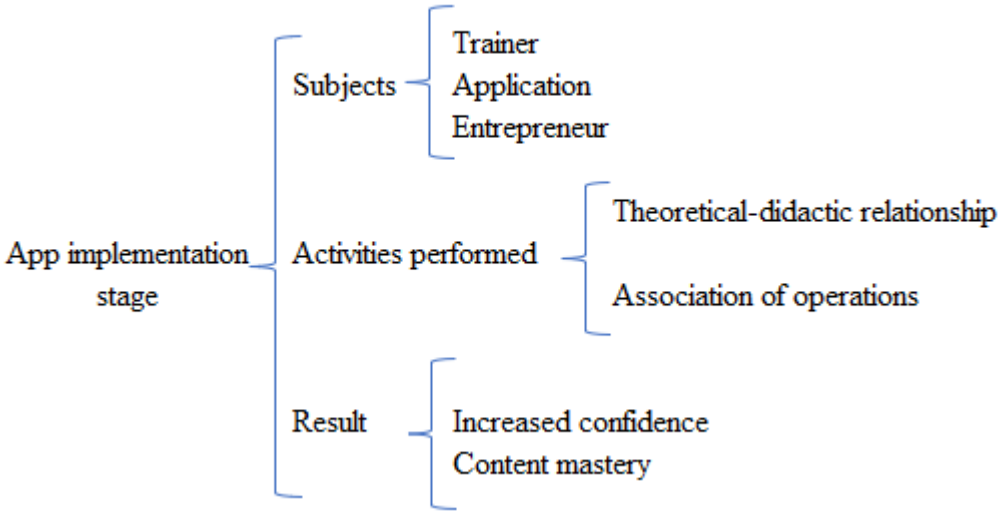


Source: self made

Stage 3: Application Deployment

In the third stage, a trinomial is generated between the instructor, the tool and the entrepreneur. Here the use of the tool is put into practice, through mixed learning. The first part focuses on knowledge of the theoretical, methodological and regulatory part that supports the daily work of MSMEs through diagrams, videos and links to support pages, such as those of the Government and some readings. The second provides examples and possible alternative control tools, and the third deals with virtual scenarios of recurring daily operations, depending on the business line (figure 6). The objective of this stage is to facilitate the understanding of the didactic resources to associate concepts and activities, as well as focus and enhance the capabilities, skills, attitudes and aptitudes of the entrepreneur or MSMEs regarding the management of their business.

Figure 6. Benefits of training with the application



Source: self made

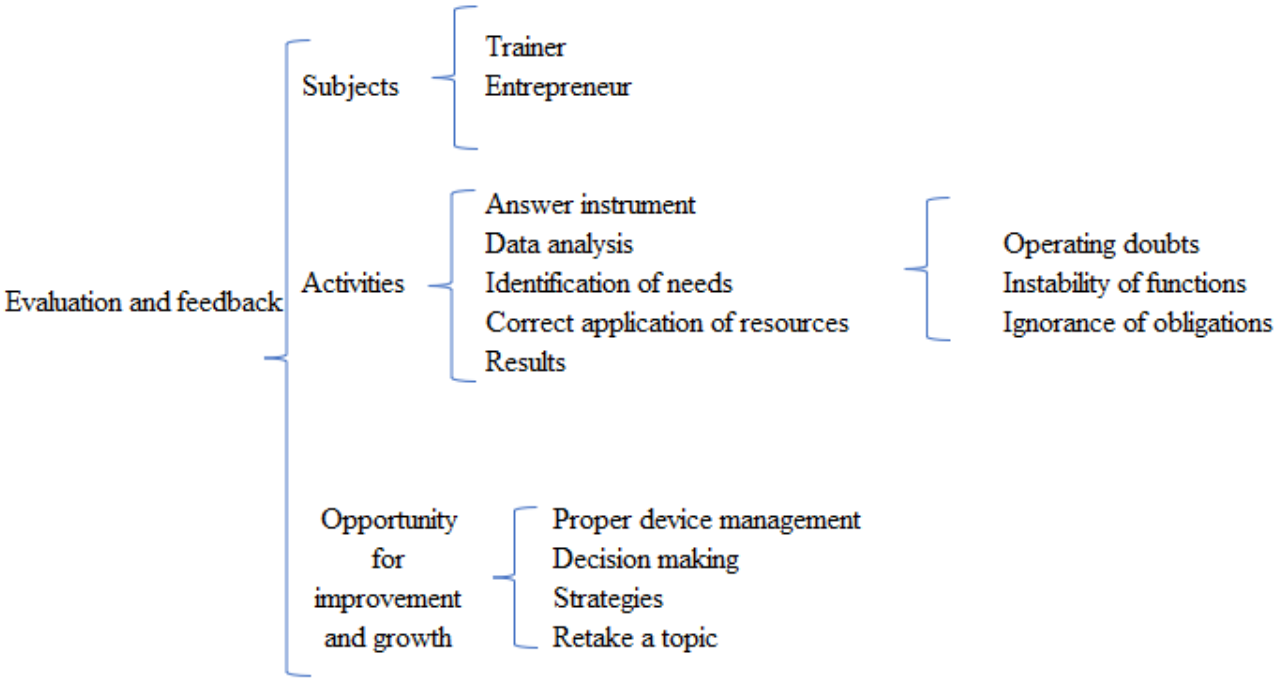
Stage 4: Evaluation

At this stage, the level of progress that has been generated in the training is known. To this end, at the end of each theoretical period and simulation exercise, a new general simulation exercise is presented. The application compares the answers provided in each of the periods with previously established ones and produces a report with the results. For his part, the instructor applies an evaluation to know the degree of satisfaction, self-realization and behavioral changes that the entrepreneur presents. The objective of this stage is to provide results on the personal and professional advancement of the entrepreneur.

Stage 5: Feedback and control

This is the last stage of the process. Here the results are already known, so, if necessary, some thematic point of the training is returned to. In this sense, the application will make known, explicitly pointing out both the entrepreneur and the instructor, the deficiencies found. If no error is found in the reality scenarios, it will let them know that it is suitable to perform the tasks that were reinforced in the training (figure 7). The objective of this stage is to show the entrepreneur their successes and possible areas of improvement that lead them to master their business.

Figure 7. Synthesis of the fourth and fifth stages of the training process



Source: self made

Results

Carrying out a detailed identification of the needs of entrepreneurs is essential to focus training effectively and develop strategies that avoid putting the financial, administrative and legal stability of MSMEs at risk. In this sense, and from a theoretical perspective, this study highlights that blended learning represents an excellent opportunity to overcome the deficiencies associated with traditional learning. Creating and using an application as a support tool can significantly improve the processes and results of those who use it.

The effect, the incorporation of mobile technology into the traditional training process, along with the development of applications that include pre-configured virtual scenarios of typical MSME operations, goes a long way in providing entrepreneurs with a realistic view of market needs. This includes identifying potential customers, creating a strong management structure, and implementing policies to manage relationships with customers and suppliers. Furthermore, this technology facilitates efficient management of resources, which in turn can lead to greater growth and market positioning.

In addition, access to an application that can be used anytime, anywhere gives learners the ability to more effectively resolve questions that may arise when working with various teaching resources.

On the other hand, carrying out an evaluation of the entrepreneur's progress gives him the opportunity to identify the modifications he has experienced in relation to his previous knowledge. This allows you to develop critical judgment about how you have run your business, comparing your actions to MSME theory, legality and operational effectiveness. If the business is already in operation, the entrepreneur can carry out a review of the resources used to achieve its objectives, which involves analyzing the productivity, quality and efficiency with which the business operates, as well as the effectiveness in the achievement of your goals. Additionally, you can explore new techniques and strategies to stimulate its growth and consequently prolong its lifespan.

The feedback resulting from this assessment benefits both the entrepreneur and the trainer by helping to identify potential gaps that have not been fully addressed and require additional attention. Otherwise, if no significant gaps are found, the entrepreneur will experience a sense of satisfaction and achievement by feeling capable of facing the various circumstances that may arise throughout the life of their business.

Discussion

The results presented support the viability of the application-based training process, which is based on blended learning and seeks to integrate technology into the traditional training method. This option is considered beneficial as it can reduce costs for both entrepreneurs and trainers. Thus, the need to hold numerous face-to-face sessions would be reduced, which would imply savings in transportation and materials. Furthermore, this modality would add value to the trainer's service and offer entrepreneurs a novel methodology with the potential for effective learning. This approach also emphasizes the importance of taking advantage of mobile resources and, therefore, contributes to the development of technology aimed at strengthening a sector as crucial in Mexico as MSMEs, which represent 99.8% of the market in the country.

On the other hand, it is important to highlight that when carrying out this research, no studies were found that proposed a training process through applications with simulations, especially aimed at the MSME sector. However, research has been conducted on the viability of simulation as a learning tool in other contexts. For example, in the mining sector, favorable

results were obtained in the adoption of this technology, suggesting a promising opportunity for the implementation of this process. Other studies also support the effectiveness of simulation technology in learning, since it allows subjects to confront situations, observe results and act accordingly, which is motivating and economical (Ballatorres, sf) .

In line with this, the *Business Games blog* (August 26, 2020) points out that the use of simulators in learning significantly improves users' skills: for example, discussing, speaking or reproducing situations increases effectiveness by 70%, while that demonstrate, plan, discover, participate and verify represents an increase of 80%. Teaching, illustrating, explaining or checking, on the other hand, increases learning by up to 95%.

Another study, focused on electrical substation personnel, highlights that training in virtual environments, especially through the use of simulators, is valuable due to the versatility of the situations that can be addressed, which facilitates the understanding and experimentation of various scenarios. (Tovar, 2023).

These perspectives from various authors emphasize the constant need for training for MSMEs, supporting the growing wave of teaching and technological resources in learning. This opens the doors to a technologically developing market that can address the needs of entrepreneurs and ultimately generate benefits for our country's economy.

Based on the arguments presented by these authors, it is concluded that the integration of technology in training processes is viable and promising. Therefore, the implementation of a training process through a specific application could offer positive results to the MSME sector. This will enrich your resources, improve your knowledge and understanding of business operations, and reduce errors in day-to-day activities, ultimately contributing to more effective management of your businesses.

Conclusions

The implementation of training through mobile technology is a viable resource that strengthens the training process for both the trainee and the trainer. This is achieved by facilitating the development of asynchronous sessions that allow topics to be reviewed, which reduces the costs of teaching and reviewing content. By understanding the specific characteristics and needs of entrepreneurs, it is possible to design a training instrument appropriate to their individual requirements identified during the training process.

In fact, when entrepreneurs get familiar with the mobile application, they realize that it contains not only the theory, but also the legality related to the pre-configured activities or functions, both before and during the actual practice. This stimulates their confidence in this new learning method and motivates entrepreneurs to use the application consciously, as they recognize the benefits they will obtain. The main purpose is for entrepreneurs to apply their empirical or previous knowledge, linking it with theory and practice in their real activities. This results in effective knowledge that they can apply in their daily tasks, resulting in a reduction in errors.

Furthermore, when evaluating the performance of entrepreneurs, we become aware of growth opportunities and possible deficiencies in the management of operations, which allows us to identify discrepancies between theoretical knowledge and its application in practice. Through feedback and analysis of evaluations, continuous improvement is promoted and business objectives are aligned, which is why this process is considered a strength in the performance and development of MSMEs. When applied appropriately, it provides these organizations with tools that ensure more efficient management of their operations and, ultimately, greater stability in the market. This generates benefits for both individual companies and the national economy.

Future lines of research

It is recommended to develop an application that meets quality standards to serve as a training tool for MSMEs in the commercial sector; This must contain preconfigured scenarios of frequent operations to measure the viability of the training process proposed in this research.

References

Alavez Segura, F., Salas Parada, BE, Carmona Cuervo, TC and Torres Gastelú, CA (2023). Vocational training practical hotel training and technology contributing to job incorporation: case of Universidad Veracruzana. *Brazilian Journal of Business, 5* (1), 447-458. https://doi.org/10.34140/bjbv5n1-029

Ballatorres, M. (sf). The design of simulations for business training. *America learning and media.* http://www.americalearningmedia.com/edicion-013/150-analisis/1401-el-diseno-de-simulaciones-para-la-capacitacion-empresarial-

Cabero Almenara, J. and Marín Díaz, V. (2018). Blended learning and augmented reality: teaching design experiences. *IRIED. Ibero-American Journal of Distance Education, 21* (1), 57-74. https://doi.org/10.5944/ried.21.1.18719

Cedillo Hernández, A. and Velázquez Garcia, L. (2022). Impact of the b-learning model on university teaching. *International Journal of Information and Educational Technologies, 12* (5), 378-383. https://doi.org/10.18178/ijiet.2022.12.5.1630

Employers' Confederation of the Mexican Republic (Coparmex) (July 25, 2022). *Micro and small businesses: economic engine of the country that deserves attention* . COPARMEX Nuevo León. https://coparmexnl.org.mx/2022/07/25/mipymes-motor-economico-del-pais-merece-atencion/

Dessler, G. and Varela Juaréz, R. (2011). *Human resources management. Latin American focus.* Pearson Education.

Canal Foundation (December 17, 2020). *Canaleduca.* Blended Learning: the method to take advantage of technology. http://www.fundacioncanal.com/canaleduca/aprendizaje-mixto-para-sacar-provecho-a-la-tecnologia/

Government of Mexico (June 13, 2018). *The importance of training for workers.* Federal Attorney for the Defense of Labor. https://www.gob.mx/profedet/es/articulos/la-importancia-de-la-capacitacion-para-las-y-los-trabajadores?idiom=es#:~:text=La%20capacitaci%C3 %B3n%20play%20a%20role, work%20that%20is%20entrusted%20

National Institute of Statistics, Geography and Informatics (Inegi) (2019). *Productivity and competitiveness of micro, small and medium-sized enterprises (ENAPROCE) 2018.* Press release NUM. 448/19. https://www.inegi.org.mx/contenidos/saladeprensa/boletines/2019/especiales/ENAPROCE2018.pdf

National Institute of Statistics, Geography and Informatics (Inegi) (2020). *Statistics regarding the day of micro, small and medium-sized businesses (June 27). National data.* Press Release NO. 285/20.

National Institute of Statistics, Geography and Informatics (Inegi) (2021). *Business Demographics* . Life expectancy. https://www.inegi.org.mx/temas/dn/#Informacion_general

Business Games (August 26, 2020). *Improve distance training using simulators* . https://www.juegosempresariales.com.mx/2020/08/26/mejora-el-aprovechamiento-de-la-capacitacion-a-distancia-utilizando-simuladores/

Larios Gómez, E. (2016). The management of competitiveness in Mexican MSMEs: empirical diagnosis from knowledge management. *Revista de Administração da Unimep, 14* (2), 177-209.

Palomo González, MA (2005). Management processes and the problems of SMEs. *Engineering, 8* (28), 25-31.

Pizarro Santos, R. (November 15, 2017). The importance of training in SMEs. *Eonsultoria Magazine* . https://revistaconsultoria.com.mx/la-importancia-de-la-capacitacion-en-las-pymes/

Ramírez Tovar, AM (2020). The human talent recruiter, grassroots actor. Training proposal. *Refereed Magazine , 46 ,* 348.

Roncancio Turriago, JL and Pinzon Villamil, JR (2020). *Virtual reality simulator for oral cleaning training in the field of dentistry through the use of virtual reality glasses oculus rift* (doctoral thesis). University of Cundinamarca.

Secretariat of Economic Development (May 25, 2018). *Sites of interest and training for micro, small and medium-sized businesses 2018. Other training tools* . Government of Mexico. https://www.gob.mx/conuee/acciones-y-programas/sitios-de-interes-y-capacitacion

Ministry of Labor and Social Welfare (July 3, 2013). *Guidelines for the operation of the Productivity Support Program* . Official Journal of the Federation. Secretary of the Interior . https://www.stps.gob.mx/bp/secciones/conoce/areas_atencion/areas_atencion/productivity_laboral/productivity/pdf/Lineamientos_DOF_PAP.pdf

Mining Safety (January 6, 2014). *Computer-based training for* plant operators and maintainers.

Tovar, A. (2023). 3D simulator for training operational personnel in 138KV/24KV electrical substations. Electronic Journal of Telematics Studies, 22(1), 105-127. http://ojs.urbe.edu/index.php/telematique/article/view/4136/5788

University of Chile (2023). Organizational development and training. Training management. https://www.uchile.cl/presentacion/vicerrectoria-de-asuntos-economicos-y-gestion-intitucional/direction-de-gestion-y-desarrollo-de-personas/desarrollo-organizacional-y-capacitacion/gestion- of-the-training/