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Original Article

Mobile Application: Inductions in a Retail Company

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Abstract *- Currently, most companies have an induction process whenever they hire a new employee. This implies a constant expense, but for some companies, the induction process only consists of assigning one of the company's internal workers to be in charge of the new worker and teach him the functions that correspond to him; this usually causes the new worker to have a poor performance in the first month of work. This research aims to design a mobile application to improve the induction process and therefore improve the performance of new workers from the first month of work. The methodology used was Design Thinking, which allowed the evaluation of different ideas and then implementation in a solution, prioritizing the user experience and achieving the development of the mobile application. A test was conducted on a population of 43 users, using questionnaires to gather information on their experience, satisfaction, and application approval. As a result, the surveyed users showed a high level of acceptance with respect to the three dimensions of the application: design, effectiveness, and induction control.*

Keywords *- Induction, Mobile application, Performance, Retail, User experience.*

1. Introduction

Companies that develop in the retail trade usually hire personnel from time to time. Therefore, these new hires are given a quick induction on various topics about the company's facilities and the functions to be performed, among other things. Consequently, the new staff has to rely on the old workers to get to know the routine, resulting in poor performance in the first month [1].

The problem that leads to low worker productivity depends a lot on the organizational culture that manages the company. It is advisable to generate certain audits that influence the development of the employee and thus establish a good relationship with the activities performed; however, control over it must be continuous to avoid ups and downs in job performance [2].

The applied induction processes can influence employee retention since these usually strongly influence workers' performance. Taking into account the type of induction applied in the companies must be analyzed. The research was conducted in New Zealand, where workers were dissatisfied with the results they obtained in their corresponding company since they did not achieve what they expected [3].

The company rotated workers who did not achieve the proposed standards; all this was due to a poor choice of induction for new workers, so even with an application, they did not achieve optimal performance [4]. That is why it was concluded that an analysis should be made for each company area and the objectives to be outlined, considering previous experiences to improve the induction process to be applied in the future. Thanks to this, the companies could take advantage of the performance of the workers to the maximum from the beginning; in the same way, it is established that the inductions must go hand in hand with the correct training to maintain the optimization of the processes for both new and old workers [5].

Highlights the problem that companies have when they do not focus attention on the correct way to train since it usually happens that not only action is not enough for new workers [6]. A Routineining every so often is beneficial for the performance of both new and old employees, which is why an evaluation should be made for each training that is performed, after a short time to know the results that can be obtained from this. In the event of poor performance, a new training strategy should be evaluated to optimize the development of the workers [7].

Similarly, in Peru, the same problems are present in the companies with respect to the entry of new employees, both in the induction and training of workers. Peru usually has a big problem with workers' performance since new employees

and those who have been working for some time are given" training and induction" to tell them what each position is about and the functions to perform. However, they do not manage an evaluation to study the results of these [29]. At present, companies are implementing the use of technology in different areas to optimize processes as well as the performance of workers.

The methodology to be used will be Design Thinking, focusing on the phases of Ideating and Prototyping, which focus on selecting a solution elaborated from the combination of different ideas and the development of the chosen solution proposal.

That is why the research objective is referenced to the design of a mobile application to improve the induction process in a retail company, whose achievement is to achieve good performance of workers from the first day of joining the organization.

This research work is conformed in the following way; in Section 2, the Literature Review is presented. Section 3 defines the methodology. Section 4 is the case study, Section 5 describes the results, and Section 6 the discussions obtained. Finally, Section 7 defines the conclusions and future work.

2. Literature Review

In this section, we have compiled different research works related to the topic, where the problem, objectives, and conclusions are shown to delve into certain points that this research wishes to solve.

According to the authors Ros and Neuwirth [9], they mention that from the appearance of COVID-19, it was determined the need to implement the technology in different labour aspects; one of the problems was the fact of being able to carry out training on responsible health the different workers remotely. They identified as a strategy the creation of tutorials to guide and train staff on health care that should be taken.[14] These tutorials were to be delivered through a mobile application. After using this application, a survey was conducted to obtain feedback on how effective the mobile application was with the tutorials. The results indicated great satisfaction on the part of several workers.[8] The results were supported by a large number of downloads of the application and the amount of time workers spent answering the questionnaire.

According to the authors [10], job training is denoted by integrating different technologies into the learning process. The mobile revolution has undergone a great deployment to design a variety of topics which allows training a person. Then, based on the different study articles presented to deal with this topic, a systematic investigation of different tendencies on the impulse of mobile applications was carried out. Concluding that it is suggested to maintain this direction of designing an interactive environment, easy to use and quick to thread topics, which influences to improve the training provided, as well as to give proposals of solution in front of the environment located.

The authors [11] mention that training health professionals involve using expensive equipment, a barrier to developing the actors' skills. So, the project's objective is to develop a mobile application with augmented reality technology, an essential element for different knowledge activities in this field. In conclusion, we obtained the approval of the professionals and quick learning for the improvement of activities to be performed.

The authors [12] mention little knowledge for novices in developing mobile applications. Where all software construction entails having some programming base to realize these technological artifacts; therefore, this article aims to emphasize the realization of mobile applications with augmented reality, which aims to give this facility to the training of automotive technicians. In conclusion, the study showed a great increase in

The actors' productivity and learning indicate that the training conducted for them improved their levels of knowledge and accuracy in fulfilling their professional work. According to the authors [13], it indicated that systems companies usually need to train their workers with the condition that it is at a distance; for this, the use of the internet and computer or application in a cellular phone is needed. For this reason, it was decided to apply the E-learning teaching model to provide training to workers about programming courses at a distance. As a result, there was a great demand for this type of training, in addition to optimizing workers' performance.

According to the authors [30], their study aimed to reveal the effect of using a mobile application on the skills of nursing students at a university in China. They posed two groups of students, a traditional one and an experimental one which would use the mobile application for teaching venous catheter blocks. As a result, it was found that the experimental group had a lower margin of error than the traditional practice group when using the mobile application. It was determined that using the mobile application improves students' skills in the short term.

In their study, the authors [15] present the objective of developing a training program to reinforce cultural competencies using a mobile application for nurses in a tertiary hospital in South Korea. For this purpose, two tests were conducted before and after implementing the training program through the mobile application. The results showed a large difference in the comparison of responses between the pre-test and the post-test of the training program,

revealing that the training program raised the cultural competencies of the nurses. It is determined that the application of this mobile application positively affects nurses, which is why the possibility of applying it in on-the-job training to improve cultural competencies is raised.

According to authors [16], in their study conducted to determine the impact of implementing an EBEKO mobile software system on midwifery students' motivation, time management, and anxiety level. The mobile software consisted of uploading the midwifery training data used in the practicum, which the instructors evaluated. The instructors evaluated and decided whether to require revision, approval or return it. The result of this study revealed that the student's time and motivation were higher than in the previous use of mobile software.

In their study, the authors [17] determine the perceived acceptance and quality of using an application for Mindfulness. This application is to improve both the teaching and practice of Mindfulness; this includes instructors and the patients themselves. The result of this study reveals that after an 8-month period of use of this application, both the teaching and practice of Mindfulness improved considerably.

Finally, the authors [18] have the objective to design a mobile application that would allow communication between family caregivers, community caregivers, and palliative care teams, evaluating the acceptance, implementation,n and proposed improvements. Upon completion of the app creation, training was provided to both caregivers (family or acquaintances) and palliative caregivers. As a result, better feedback was obtained for palliative caregivers, allowing a better understanding of symptoms and concerns. This application also applies to the training of new staff in palliative care of people, as through constant communication with patients, better instruction on what actions to take in different situations of the terminally ill is achieved.

Based on the research work shown in this section, it was evident that in most studies and research on the development of mobile applications for different teaching, training and induction of workers, there is no plan to update the application, which is why it becomes obsolete after a while, so we will propose the development of a mobile application with the plan to keep it constantly updated.

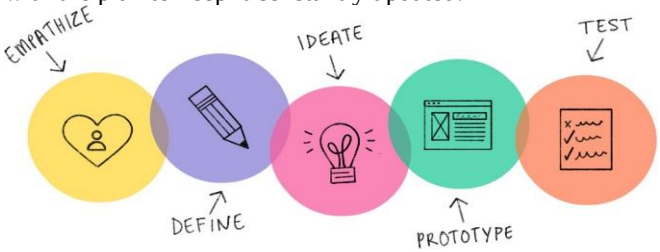

Fig. 1 Methodology Design Thinking

3. Methodology

The methodology used in this research work is Design Thinking, a method based on the different ideas that can be part of the solution to real problems, where the user experience is prioritized. According to [19], it details that involving this method in research work will help the relationship between user and innovation since each idea is part of constructing an effective solution to any problem. The flow of the methodology is shown in Figure 1.

3.1. Phases

3.1.1. Empathize

This is the phase of the methodology where we have focused on understanding and discovering the company's needs. This is the basis or essential phase of the entire methodology since the company was analyzed in order to understand the processes, motivations, and other factors of the company. As well [20], they mention that the first phase consists of achieving an understanding of the needs that the users have or the difficulties that they have. For this, a questionnaire or form of questions can be used to obtain information in the same way it can be obtained simply by observing. They also indicate that emphasis should be placed on different users since, thanks to the different points of view, it will be possible to anticipate future needs and barriers that may appear in the process.

3.1.2. Define

In this stage of the methodology, the company's main problems were identified based on an in-depth evaluation. The problems to be solved were successful. Likewise, [31] emphasizes that the importance of this phase lies in clarifying the different and possible difficulties that the user may have, since thanks to this, it will be possible to propose solutions in the next phase.

3.1.3. Ideate

At this stage, we have come up with various solutions to the problem identified and chosen to solve it. The brainstorming technique was also used to come up with possible solutions in a creative way. As [22], mentions that ideation is the phase of the methodology where a concrete solution is consolidated after having brainstormed; thanks to the help of different points of view and feedback, a proposed solution can be chosen, or several solutions can be merged to create a new and more complete one.

3.1.4. Prototype

In this phase, we have managed to develop the solution proposed above based on low-cost technological tools to develop a functional prototype. As indicated by [23], it is the materialization of the ideas previously raised; since a prototype is an object with which the user can interact, it opens the possibility for creativity to participate in this stage.

3.1.5. Test

In this last phase, tests are carried out to evaluate that it meets the needs that have been identified and to identifyhow satisfied the company is with the solution developed. This phase is also used to make the necessary corrections. Likewise, [24] mentions that in this phase of the methodology, it is important to take into account every detail of the construction of the prototype, the design, and the structure, among other factors. All participants' commitment to constructing the prototype is important since the final product must satisfy all the needs and work optimally.

3.2. Design Tools

3.2.1. Figma

Figma is a web tool for interface design, which was used to get an idea about how the mobile application will look when used, and it is the bestof the best in interface design projects [25]. Then, Figma allowsus to elaborate a complete design, having the option to import images and the use of plugins to add an expand the use of the applications.

3.3. Development Tools

3.3.1. Java Programming Language

Java is a language currently widely used for application development, where the mobile environment is of great help according to the synergy it handles with database engines. According to [26], it is a very operational language to have several libraries that allow the development of mobile applications to be more practical and multifunctional.

3.3.2. Microsoft SQL Server

It is a commercial database engine widely used for software development, where its major outcrop is dedicated to the business world. Thanks to its ease of data management and the Transact-SQL development language, it is a database that ensures the relationship between different entities that fit the research context. The security that provides SQL Server in the data encryption is very good, achieving that all information put in it is reserved and safe [27].

3.3.3. IDE Android Studio

It is an integrated development environment which allows the creation of mobile applications for the Android platform. It denotes a practical and simple way to code and emulate based on the environments for which you want to fulfil the purpose. Also, according to [28], it details that thanks to the connectivity resources with different resources, it shows a wide feasibility of creating applications to solve any problem.

4. Study Case

In this section, we developed the case study of the Design Thinking methodology with respect to the realization of the mobile application for a Retail company. It is important to know that the company of study in which we will develop this methodology is Hiperbodega Precio Uno, located in the district of Chorrillos, Lima, Peru. It is a company of the chain of Hiperbodegas Tottus, which has the business of selling food and non-food products [22].

Then, according to the Design Thinking methodology, in the" Empathize" phase, information was gathered to identify the needs and problems of the company. In this way, theobservation technique was used, with the instrument of an index card with a checklist in one of the tables. Table 1 shows the questions asked and the answers marked based on what was observed in the company.

Table 1. Observation form

Questions	Yes	No
Is there a good working environment?	X	
Is there respect between supervisors and the staff they are in charge of?	X	
Is there good communication among employees?	X	
Do you supervise the work performed by employees?	X	
Do they have working tools in good condition?	X	
Do you have good incoming goods management?		X
Is there punctuality in remuneration?	X	
Is there punctuality in remuneration?		X
Do you integrate new personnel quickly into the company's database?	X	
Do you have an Induction process?		X
Is there a staff focused solely on the induction of new employees?		X
Do you set aside time specifically for induction?		X
Do you perform an evaluation of new employees after the first week of starting at the company?		X

Table 2. Problems Encountered

No.	Problems
1	Poor performance of new entrants
2	Slow communication with job applicants
3	No induction process
4	They do not have specific personnel for the induction of new employees.
5	There is no specific induction-focused time.
6	No evaluation to analyze the performance of new workers after they have joined the company.

Table 3. Method Metrics

Factors	Deficient (1)	Regular (2)	Good (3)
Time to Complete induction (15%)	Long execution time	Moderate execution time	Short execution time
Development and planning time (25%)	A lot of time in development and organization	Moderate development and organization time	Little time for development and organization
Viability (35%)	Low viability	Regular viability	Good viability
Attractive to users (25%)	Little attraction	Regular Attraction	Greater attraction

Fig. 2 SWOT Analysis

In summary, based on the information obtained from the observation sheet, it was determined that Hiperbodega Precio Uno has 6 specific problems, as shown in Table 2 below.

In the" Define" phase, according to the information gathered, the company's problems were identified. However, it is essential to carry out an internal analysis to validate that all the information collected is of quality and in accordance with what the company really presents.

There are many techniques to analyze an organization and its strengths and weaknesses; however, the SWOT analysis is a complete and widely used methodology for this type of environment. So, by using this tool, all the characteristics shown in Figure 2 were obtained through interviews with new recruits and old staff.

Then, it was defined that the most critical problems are in the lack of induction and continuous evaluation of new entrants since not having the aforementioned generates a low work performance in the daily routine and other problems that are formed from these. Therefore, it is necessary to find different solution alternatives and determine which of these is the best fit for the company.

In the" Ideate" phase, according to the problems selected as the most important to solve, different solutions have been proposed that align with what the company needs and what benefits it would get from them. The ideas are" Organize face-to-face inductions", "Develop a mobile application focused on inductions", and attach an inductions section to the company's Intranet platform.

According to the solution proposals, the traffic light method was used to select the most relevant one that could greatly benefit the company. The scoring metrics for each proposal were based on the characteristics shown in Table 3 below. Then, the selection process of ideas or proposals was carried out based on the percentages of the factors and the rating according to the sections of Deficient (1), Regular (2) and Good (3). As shown in Table 3 above.

Subsequently, the proposal to develop a mobile application for induction and simultaneously evaluate the knowledge of new entrants achieved a score of 2.4, which denotes the best solution to the problems presented by the company (see Table 4).

At the "Prototyping" part of the methodology used, the application prototype was made using the Figma tool, thus establishing the design of the application interfaces as well as the functions of each button and action of the application. The following interfaces were performed: Based on the "evaluate" phase, a survey was made to the company's personnel to achieve a better synthesis of conclusions and to know the effectiveness of the research work.

The measurement used to measure the results is the Likert scale, according to the indicators "Strongly agree", which will have a value of 1, "Agree", the value of 2, "Undecided", 3, "Disagree", 4 and "Strongly disagree", 5. The survey questions are shown in Table 5 below.

Table 4. Traffic Light Method Metrics

Proposals	Time To Complete Induction	15%	Development And Planning Time	25%	Viability	35%	Attractive To Users	25%	100%
Face-to-face Inductions	1	0.2	2	0.5	2	0.7	1	0.3	1.6
Inductions through a mobile application	3	0.5	2	0.5	2	0.7	3	0.8	2.4
Inductions by intranet platform	2	0.3	1	0.3	2	0.7	2	0.5	1.8

Table 5. Survey Questions

Nª	Questions
	Design
1	Does the mobile application prototype promote an easy understanding of its design and functionalities?
2	Do you consider that the prototype design fulfills its purpose in induction?
	Efficacy
3	Do you think this mobile application is a great resource to guide and show the routine to be performed by the staff in each area?
4	Do you think this mobile application is a good induction methodology?
5	Will this mobile application be optimal for the company and get the most attention from future hires?
6	Do you consider that this mobile application could be applied to promote training and other audits with respect to improving productivity?

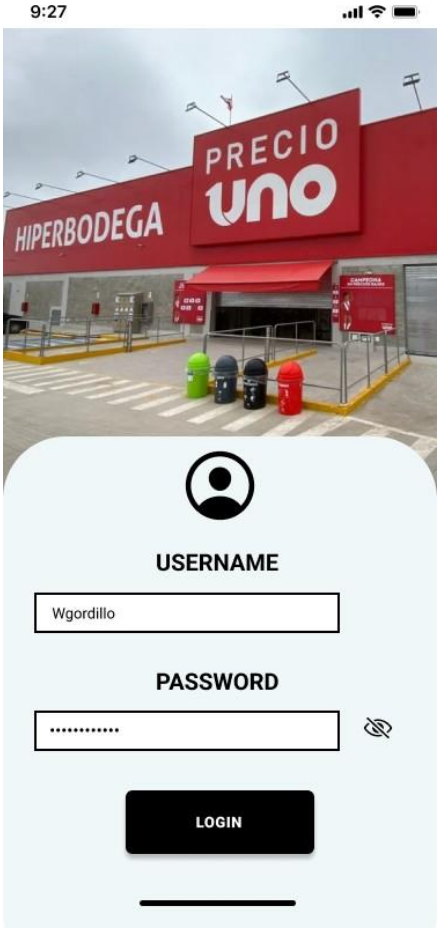

Fig. 3 Interface Login

Fig. 4 Home Interface

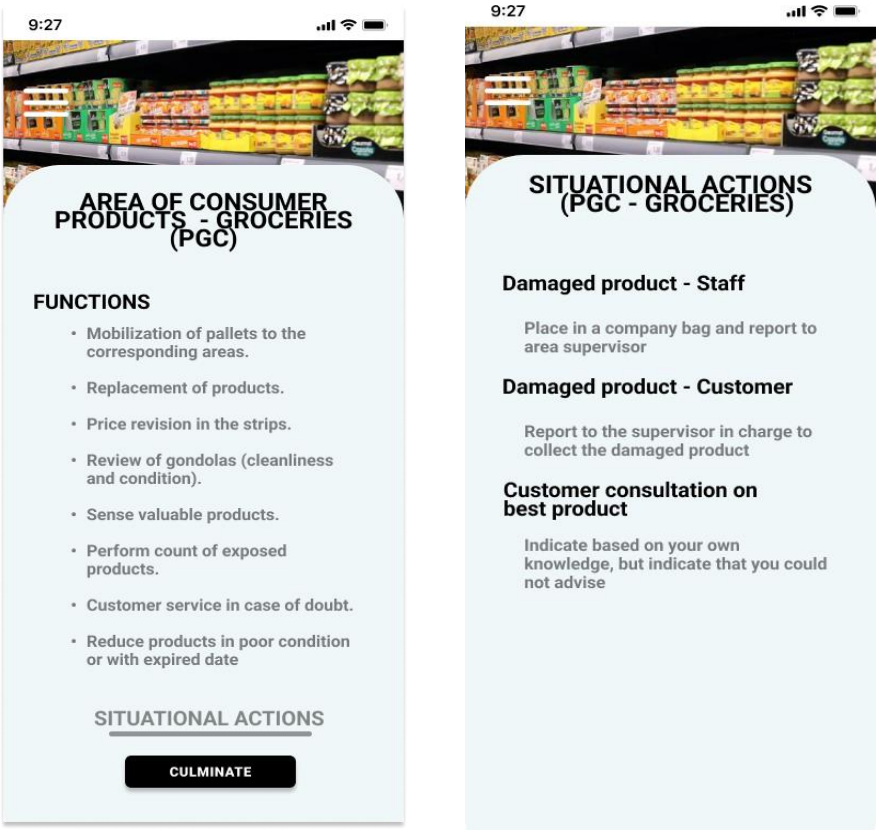

Fig. 5 Function Interface

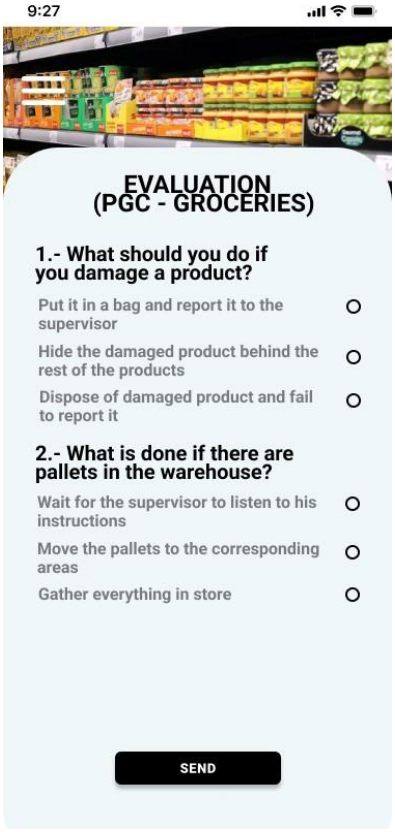

Fig. 6 Interface Evaluation

5. Results

5.1. According to the Case Study

The methodology used contributed to quickly surveying information regarding the problems presented to the company. This led to raising different proposals for quality and effective solutions at the time of implementation. Then, the problems with the greatest impact were highlighted and later analyzed, and different ideas were proposed. Thanks to the evaluation methods, it was concluded that it is convenient to use inductions within the company to develop a mobile application.

This application was designed with attractive interfaces, simple handling, and easy understanding. Developing several interfaces for the correct operation and quick handling of the application.

According to Figure 3, can see how to access the application, which provides security in terms of information on the internal functions of workers within the company. Similarly, in Figure 4, the areas that contain the company, the name of the supervisor of the areas, and the name of the user who entered the application, give the option to select one of these to access the functions that would perform during the day.

Figure 5 shows the functions or tasks that the person will perform during the day within the company and how to act according to unusual situations that could occur during working hours. Finally, in figure 6, can see a surprise evaluation to assess the level of understanding and commitment of the worker with respect to the functions that were previously indicated, as it may happen that the staff does not read carefully all the tasks to be performed and in the course of the day does not know how to react or act with respect to situations and duties to perform.

For the validation of the effectiveness of the mobile application, a survey was developed based on 3 dimensions or categories, where each question collected optimal information for the interpretation of results according to its dimension.

The questions answered in the questionnaire were evaluated based on the results obtained. The group of answers to each question was analyzed to obtain the mean of these, as well as their standard deviation [6], thus determining the level of acceptance that the application of induction would have in the Retail company, as shown in the following table:

Table 6. Results Obtained

Questions	Answer	Men	Woman	Total
Design				
Does the prototype of the mobile application promote an easy understanding of its design and functionalities?	Strongly agree	7 (41%)	10 (59%)	17 (100%)
	Agreed	13 (50%)	13 (50%)	26 (100%)
Efficacy				
Do you think this mobile application is a great resource to guide and show the routine to be performed by the staff in each area?	Strongly agree	11 (52%)	10 (48%)	21 (100%)
	Agreed	9 (41%)	13 (59%)	22 (100%)
Induction Control				
Do you agree that the diagnostic test that the mobile application entails will be very useful to know the level of commitment the new employee has with the company?	Strongly agree	14 (47%)	16 (53%)	30 (100%)
	Agreed	6 (46%)	7 (54%)	13 (100%)

At the end of the company's personnel survey process, 43 responses were obtained, which helped to generate the following graphs in the dimensions of "Design", "Effectiveness", and "Induction Control". Getting a better understanding of the feasibility provided by the application.

Thanks to this, it was determined that the design of the application, with the question" Does the prototype of mobile application promote an easy understanding in its design and when using the functionalities?" a mean of 1.6 was obtained, which indicates that the answer" Strongly agree" was the most popular, demonstrating a high level of acceptance on the scale. Similarly, the effectiveness of the question" Do you think this mobile application is a great resource to guide and show the routine to be performed by the staff in each area?" obtained a mean of 1.51, indicating that the answer" Strongly agree" was the most popular, demonstrating a high level of acceptance on the scale.

According to the survey, At the end of the company's personnel survey process, 43 responses were obtained, which helped to generate the following graphs in the dimensions of" Design"," Effectiveness", and" Induction Control". Achieving a better understanding of the feasibility provided by the application.

The following table shows a detailed statistical breakdown of the responses to the questionnaire, based on gender (Male and Female). Showing the representative questions in terms of the dimensions of the questionnaire. Based on the results obtained, the questions answered in the questionnaire were evaluated. The group of answers to each question was analyzed to obtain the mean of these, as well as their standard deviation, thus determining the level of acceptance that the application of induction would have in the Retail company, as shown in the following table:

The scale was measured based on 1-2, which denotes a high approval of the application; 2-3.5, a regular acceptance; and 3.5 - 5, a low acceptance, and the measurement of the mean based on 1, which represented the response Strongly Agree, 2 to Agree, 3 to Undecided, 4 to Disagree and 5 the response Strongly Disagree, in order to better interpret the results in Table 6.

Thanks to this, it was determined that the design of the application, with the question" Does the prototype of the mobile application promote an easy under- standing in its design and when using the functionalities?" a mean of 1.6 was obtained, which indicates that the answer" Strongly agree" was the most popular, demonstrating a high level of acceptance on the scale. Similarly, the effectiveness of the question" Do you think this mobile application is a great resource to guide and show the routine to be performed by the staff in each area?" obtained a mean of 1.51, indicating that the answer" Strongly agree" was the most popular, demonstrating a high level of acceptance on the scale.

Table 7. Survey Question Evaluation

Questions	Media	Standard Deviation	Scale
Design			
Does the mobile application prototype promote an easy understanding of its design and functionalities?	1.60	0.495	high
Do you consider that the prototype design fulfills its purpose in induction?	1.65	0.482	high
Efficacy			
Do you think this mobile application is a great resource to guide and show the routine to be performed by the staff in each area?	1.51	0.506	high
Do you think this mobile application is a good induction methodology?	1.70	0.465	high
Will having this mobile application for the company be very optimal and get the most attention from future hires?	1.72	0.630	high
Do you consider that this mobile application could be applied to promote training and other audits with respect to improving productivity?	1.47	0.505	high
Induction Control			
Do you agree that the diagnostic test that the mobile application entails will be very useful to know the level of commitment the new employee has with the company?	1.30	0.466	high
Do you consider that the diagnostic test, being surprising, will have a better impact on the understanding of each personnel's routine and thus respond correctly to the questions posed?	1.33	0.474	high

Table 8. Methodology Validation

Criteria	Design Thinking	Scrum	Rup	Cascade
Phases	5	5	4	4
Scope	5	5	3	4
Adaptability	5	4	3	3
Execution time	5	5	3	3
Total	20	19	13	14

Likewise, the induction control with the question" Do you agree that the diagnostic test that involves the mobile application will be very useful to know the level of commitment that the new employee has with the company?" a mean of 1.3 was obtained, which indicates that the answer" Strongly agree" was the most popular, demonstrating a high level of acceptance on the scale (see Table 7).

5.2. According to the Methodology

Based on the Design Thinking methodology was used in this research work. Comparison and validation ofthis same one, in front of other methodologies, was made, achieving to know that the chosen one was optimal for what happened (see Table 8).

6. Discussions

In the findings obtained from the research through the survey conducted, a high level of approval was obtained from the personnel to dimensions that validate the effectiveness of mobile applications, including the design, effectiveness, and control of induction. This includes the design, effectiveness, and control of induction, referring to the application's ease of use and the workers' commitment.

Although there is a difference in the situation developed,it was possible to maintain coincidence in the research objective, and it is that, like the author [5], it was sought to improve the induction process through technological tools. In addition to finding similarities in the method of obtaining information, by conducting a survey of users, there was a difference in the percentage of positive responses to implementing the new induction technology.

According to the methodology, the difference was found with the author [11], who used the ADDIE methodology, a model that denotes a descriptive guide that each phase mustgo through an evaluation to maintain the same guideline to develop the most effective; At same time, design thinking focusesits evaluation at the culmination of all phases.

On the other hand, the validation of the application, according to the same author, was based on an evaluation from a test in two scenarios, before and after the implementation, achieving the detailed level of impact and affordability by users, which on the part of this research work only a survey was used, with the purpose of making known the viability of the application, to be implemented later.

7. Conclusion

In conclusion, the mobile application for the induction process was successfully developed. The effectiveness and approval of the mobile application by the workers of the retail company" Hiperbodega Precio UNO" were demonstrated through the survey that was developed in the" Evaluate" phase of the Design Thinking methodology, where the dimensions of design, effectiveness, and control of induction were contemplated. Similarly, a limitation in the development of the application is the Android Studio tool since it can only develop applications for Android systems but not for IOS. As a suggestion for the future, it is recommended to implement the application in combination with Augmented Reality technology to enhance performance and give greater emphasis to the routine activities of employees. It is also recommended to convert it into a multiplatform to use it from different technological tools. According to the methodology, it is suggested to use the Scrum methodology as an alternative for the future development and complementation of this application.

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