

An inclusive digital basket

Learnings based on field experiments on inclusive digitization in El Salvador's tourism sector



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An inclusive digital basket

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inclusive digitization in El Salvador's tourism sector

UNDP Accelerator Lab in El Salvador

United Nations Development Programme,
September 2022



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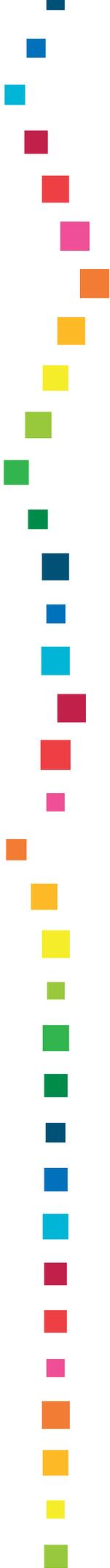


Table of contents

Presentation	5
Introduction	6
1. Learning cycle on inclusive digitization	8
2. Portfolio of experiments on inclusive digitization	11
3. Results and Learnings learned from the experiments	14
3.1. Learnings learned about the effectiveness of digital baskets and digital helpers	15
3.2. Learning about models of digital service promoters and digital service help points as a tool to close the digital divide	23
3.3. Learnings about the effectiveness of video tutorials, the role of trainers and their effect on knowledge and trust in digital financial services	33
4. Conclusions and ideas for action	39
4.1. The Digital Basket 1.0.: A promising model for inclusive digitalization	39
4.2. Digital helpers and support networks: collective intelligence for bridging the digital divide.....	40
4.3. Hybrid channels and resources for scalability	41
4.4. From discovery to action	42
5. New questions for experimentation	43
5.1. New questions about the baskets of digital services and the role of assistants	43
5.2. New questions about the promoter and digital service booth models	44
6. Methodological annex	47
6.1. Experiments on the effectiveness of digital baskets and helpers	47
6.2. Experiments on promoters and digital service kiosks ...	48
6.3. Experiments on digital financial services	52
Glossary	54
References	57

Presentation



We recognize that the COVID-19 pandemic marked a before and after in all aspects of life and exposed more than ever that digital technologies are important tools for maintaining and promoting people's livelihoods, as well as for bringing them closer to public services such as education, health and social protection, among others.

The non-pharmacological measures implemented to control the spread of this disease led to an economic recession in 2020. In this regard, ECLAC estimated a contraction of El Salvador's GDP of 8.6%, with a great impact on the loss of jobs and livelihoods. life for the Salvadoran population.

As part of the economic recovery process, digitization has accelerated in society. This is how digital inclusion and the possibility of adapting livelihoods to a context of growing digitization can become alternatives not only to recover income, but also to recover in better conditions. However, the digital divide is enormous and particularly affects the most vulnerable people.

The Digi-Chiquihuites project is one of UNDP's commitments to inclusive digitization as a catalyst for sustainable economic and social recovery through rapid response funds for the COVID-19 crisis (RRF ¹), which focused on two populations that were hard hit by the pandemic: women micro entrepreneurs in the tourism sector and teaching staff affiliated with the ISBM.

These programmatic components are framed in the spirit of the 2030 Sustainable Development Agenda and the UNDP Country Program Document in El Salvador 2022-2026 and are particularly aligned with the fulfillment of the Sustainable Development Goals on Gender Equality (SDG 5), Inclusive and Sustainable Economic Growth, Employment and Decent Work (SDG 8) and the Reduction of Inequalities (SDG 10).

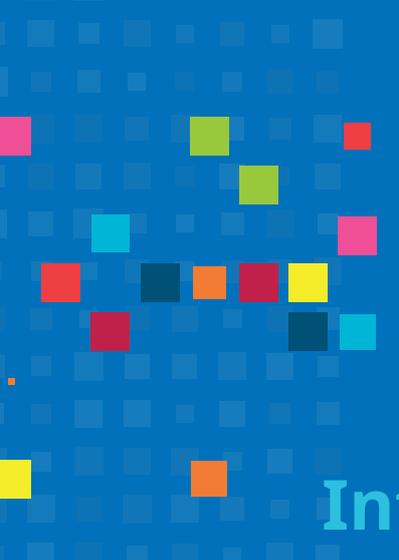
Likewise, Digi-Chiquihuites marks an important milestone in UNDP El Salvador, being the first project to incorporate the methodology and practices of the Accelerator Labs from its design, with the aim of generating actionable intelligence from exploration practices, mapping of solutions and experimentation to scale up interventions with the greatest potential through other UNDP initiatives, its partners in the Government of El Salvador and any other interested entity.

This role of the Accelerator Labs is part of its consolidation as a research and development (R&D) arm of UNDP at a global level, as established by the UNDP Knowledge Management Strategy 2022-2025 and, particularly, one of the priority actions of the strategy: "Amplify R&D capacities to identify trends, emblematic challenges and outline the future of development".

In this document we present the results and learnings learned from the experimentation methodologies of the Accelerator Labs in the tourism sector component of the Project. We hope that what is presented here contributes to the progressive formation of knowledge to help reduce digital divides and meet the challenge of not leaving anyone behind on the road to meeting the objectives of the 2030 Sustainable Development Agenda.


Kryssia Brade

Deputy Resident Representative of the UNDP in El Salvador



Introduction

Although the digital revolution has advanced rapidly and has had a huge impact, it is still far from being universal (UNDP, 2019). In particular, disparities in access and use persist in the different territories, socioeconomic, age or gender groups, which may widen in the context of the pandemic. This situation can foster the creation of greater gaps between winners and losers, thus posing additional threats to stability and social cohesion (OECD, ECLAC, CAF and EU, 2020).

Regarding the crisis and economic recovery, micro and small companies have been the most affected, since they have little access to connectivity, which may be making it impossible for them to communicate and work with their collaborators (see UNDP, 2020). Within these, the most affected sectors in this crisis have been commerce, hotels, restaurants and education. The former are a fundamental part of the country's tourism sector, and in this crisis the merchants of the sector were the first to close their businesses and the last people to open them again.

However, people have resorted to the digital technologies at their disposal to try to mitigate the effects of the great impacts that the pandemic generated in their businesses and, in the process, creating innovative solutions, adapting their business models, highlighting the opportunities that digital technologies represent for MSEs, as well as the main challenges for a true inclusive digitization of the sector.

This situation is not exclusive to El Salvador and the Global Network of Accelerator Labs has been activated to explore, map solutions and design portfolios of experiments around inclusive digitization. From the incorporation of informal companies to e-commerce mechanisms in [Uganda](#), to the testing of a network of neighborhood stores that offer assistance in carrying out digital procedures to neighbors in [Argentina](#), there are many more instances where the network is generating actionable intelligence that can become new UNDP activities and

projects at the local and global levels, aligned with the Digital Strategy 2022-2025 that puts human rights at the center of it, since digital technologies intervene more and more in all areas, from health care, employment and education to participation in social, cultural and political life (UNDP, 2022).

Thus, Digi-Chiquihuites² is the first UNDP El Salvador project to incorporate the methodology and practices of the Accelerator Labs³ from its design, with the aim of generating actionable intelligence from exploration, mapping of solutions and experimentation through small scale, so that the interventions with the greatest potential can be scaled up through other initiatives of UNDP, its partners in the Government of El Salvador and any other interested entity.

The project has worked on two strategic components. Component 1 was developed in conjunction with the Ministry of Tourism (MITUR) and the Salvadoran Tourism Institute (ISTU) with the aim of designing a basket of digital services to safeguard livelihoods and improve the financial inclusion of women entrepreneurs in the country, tourism sector, mainly in the circuit of ISTU and CORSA-TUR tourist centers.

The first version of this “Basic Digital Basket” for tourism micro-enterprises included means to increase access, capabilities for effective use of digital services, and enablers that facilitate digital inclusion. Consequently, the project set out to contribute to reducing digital and financial inequalities, and thus achieve greater access to basic services and livelihoods.

The second component of the project sought to strengthen the capacities of the Salvadoran Institute of Teacher Welfare (ISBM for its initials in Spanish) for the development and adoption of digital health services through the proof of concept of a virtual care mechanism for ISBM users and their families.

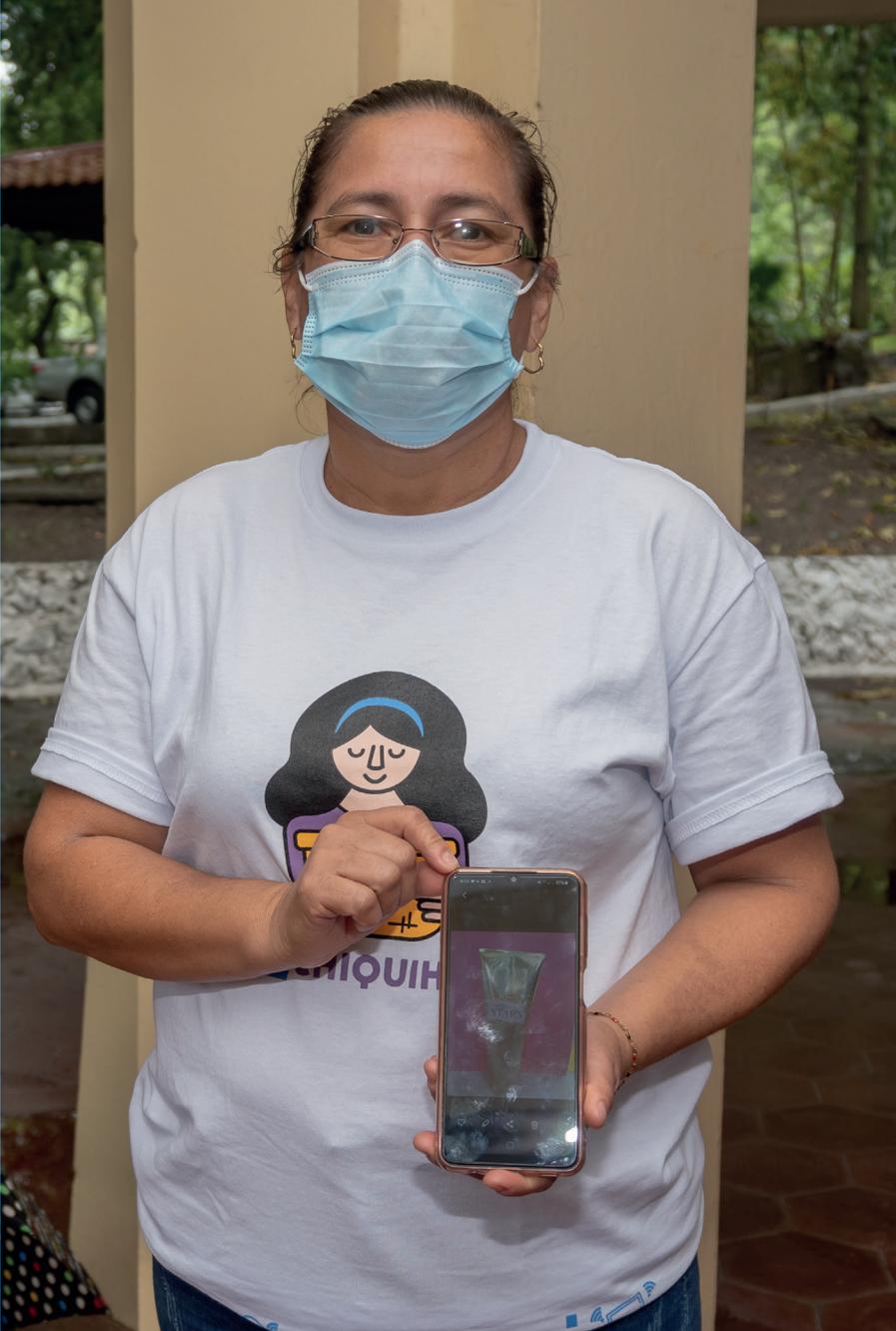
This document narrates the results and learning derived from a portfolio of experiments carried out at the UNDP Accelerator Lab in El Salvador, around the challenge of inclusive digitization of Component 1 of the Digi-Chiquihuites Project and as part of the second learning cycle developed by the Lab.

The report has been structured as follows: first, a section is dedicated to explaining the learning cycle of the Accelerator Lab dedicated to the topic of inclusive digitization. The second section provides details about the portfolio of experiments developed and its procedures.

² The word Chiquihuite comes from the Nahuatl Chiquihuitl, one of the languages used by the native peoples of El Salvador and means “Basket”.

³ The UNDP Accelerator Labs represent a research and development (R&D) network around the challenges of sustainable development.

Inclusive digitization considers not only physical accessibility, but also the development of personal skills and the exercise of rights in pursuit of a digital citizenship in which no one is left behind.



The third section presents the results of the experiments. Key learnings and supporting evidence are highlighted here. A section is then devoted to general conclusions and actionable ideas. The subsequent section addresses new questions for experimentation derived from the learning generated. Finally, a section containing the most relevant methodological aspects of each experiment is presented.

Digital technologies can help improve productivity, help mitigate climate change, foster inclusion, and transform public institutions, but they will only do so if all citizens and businesses can benefit from a digital transformation promoted through a people-centered approach (OECD, ECLAC, CAF and EU, 2020).

Among the things that the COVID-19 pandemic taught us is that the access and ability to use digital tools are important metrics of inclusion or exclusion. The capabilities approach developed by Amartya Sen, on which the human development discourse is based, posits that people's quality of life is determined by their ability to achieve certain goods and actions. It is living not only free from material restrictions, but also living under a positive approach to freedoms, in which individuals are not limited by the environment to reach their full potential.

This is how inclusive digitalization refers to fully developing personal skills, knowledge and behaviors in the use of technology, access and the digital way of connecting; in addition to stimulating the creation of public policies that respond to these needs with equality and equity for all people.

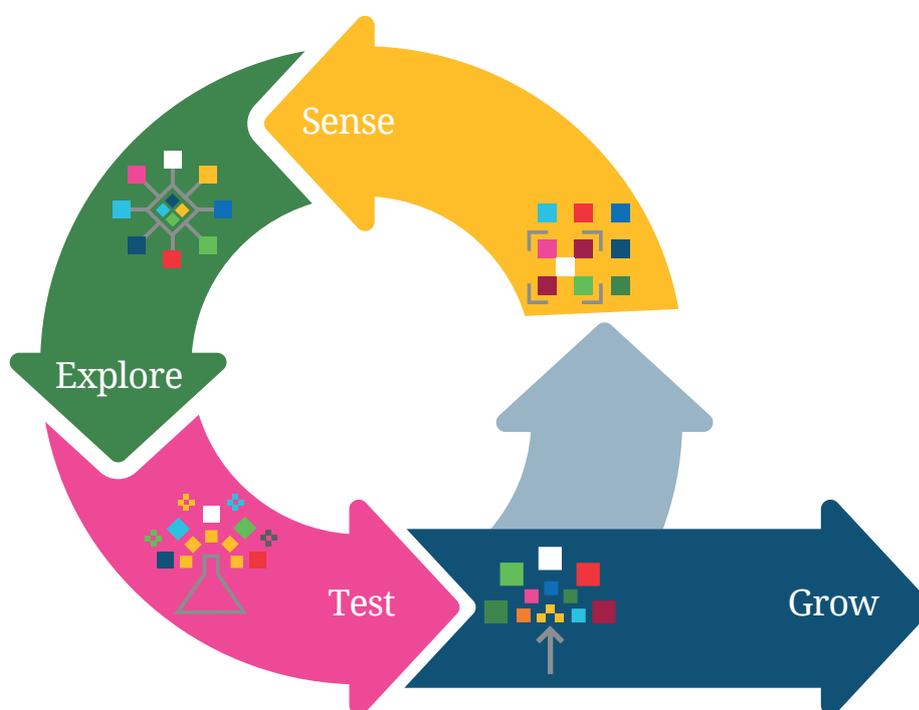
The Accelerator Labs operate in short learning cycles, and their main function is to work on a small scale to obtain learning that can be used in the design of solutions. The Accelerator Labs in El Salvador focused the efforts of the second learning cycle on the topic of inclusive digitization that occurred around the Digi-Chiquihuites Project.

1

Learning
cycle on
inclusive
digitization

As shown in the diagram below, a learning cycle includes 4 phases: exploration, which is responsible for making sense of data from traditional and non-traditional sources; solutions mapping, as an ethnographic practice that seeks to empathize and seek grassroots solutions with the communities; experimentation, as a practice in charge of designing portfolios of experiments to test what works and what doesn't, and finally the scaling of proven solutions.

Figure 1. Learning cycle of the UNDP Accelerator Labs.



Source: Own elaboration.

2

Portfolio of experiments on inclusive digitization

The experiments share common characteristics that make them valuable for science and problem solving. They break down big problems into smaller questions that can be investigated in a manageable, structured, and transparent way (Hopkins, Breckon, & Lawrence, 2020).

There is actually a great variety of ways to experiment; from pre-experimental designs, which include concept tests, prototyping, pre-post tests and pilot studies, ideal in the early stages of the process of learning what works, what doesn't and why.

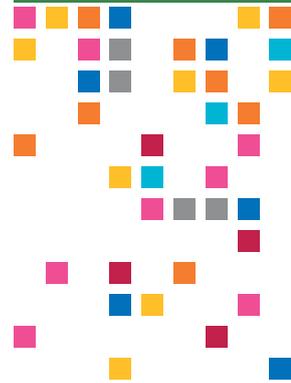
In addition, there are quasi-experiments, also called non-randomized experiments or natural experiments, which, faced with fortuitous events of a policy intervention, seek to emulate conditions of randomized experiments in order to estimate what would have happened. Among the most common are methods such as Difference-in-Differences (DiD), Regression Discontinuity, Matching by observables or scores (PSM) and Synthetic Controls.

Finally, there are randomized experiments, such as A/B tests, and variants of randomized controlled trials (RCTs), such as individual and cluster, factorial, and stepped trials, among others. These are particularly recognized as the gold standard in causal inference, as randomization allows observable and unobservable characteristics to be balanced between treated and untreated groups, eliminating possible selection or self-selection bias in the estimation of treatment effects.

Regardless of the method, experiments are mechanisms for testing hypotheses about how to change the current state of a development challenge. Within the methodology of learning cycles of the Lab, experiments are carried out to obtain verifiable evidence on whether the hypotheses proposed are fulfilled or not. In this way, experiments are ideally organized into small-scale, interconnected test portfolios, which contribute to the formulation of useful learnings for larger-scale implementations.

A fundamental piece of a portfolio of experiments is the protocol. This instrument documents the steps to be carried out to perform each of the tests or experiments. The portfolio of experiments starts from the identification of problems in the field and sources of information, the hypotheses to generate a change, design, methods, subjects and procedures for the development and replicability of the experiments.

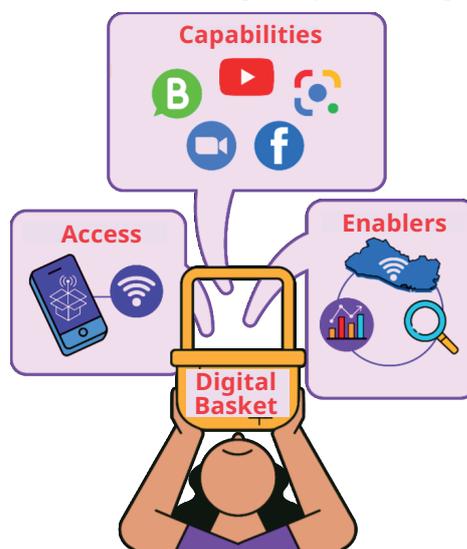
In the case of the learning cycle on inclusive digitization of Digi-Chiquihuites, the Accelerator Labs team, with the support of the project coordination, tested a total of 15 hypotheses about the effectiveness of different consulting or assis-



tance models personalized technique on digital services to micro-entrepreneurs, to identify the impact that these could have in generating positive attitudes, knowledge, skills and trust of the people participating in the project.

Based on baseline information⁴, the first version of the baskets was designed with access components, capabilities and enablers, in the form of mobile devices, a training program in digital skills and mobile internet connectivity, with the aim of safeguarding the livelihoods and improving the financial inclusion of women.

Figure 2. Elements of the Digi-Chiquihuites digital basket



Source: Illustration made by Tatiana Orantes.

Some project participants relied on self-appointed digital assistants (generally younger family members) to help them receive the training and serve as a guide to facilitate access to digital services and products that benefit their businesses and their access to digital citizen services.

However, not all the beneficiaries of the project had a close family member or friend who played the role of helper, so it became important to explore on a small scale the role of other figures outside the close group. In this case, it was decided to experiment with a model of digital services help points, where the accompaniment is provided by a person who is outside the group of family and friends.

⁴ The baseline collected information on sociodemographic aspects, lifestyle, access to technology and digital literacy; details of the infrastructure where the businesses operate, the relationship with their clients and personal finances, as well as the businesses they run.

In particular, it sought to test two models of assistance or advice as a tool to close the digital divide: the first consists of a promoter of digital services who visit the tenants of tourist centers and offer assistance on how to access a series of digital services. The second model consists of fixed points where there is a promoter, who has been trained to answer queries on predefined topics, related to how to access digital services.

In addition, the distance component of Digi-Chiquihuites' "Connect with your Business" training program led to experiments with virtual mechanisms for digital services, which are low-cost and easy to scale. In particular, on financial digital tools. This issue is important, as expanding digital financial services could help developing economies cope with the crisis in times of COVID-19 and boost growth (Pazarbasioglu & Garcia Mora, 2020).

However, this is also one of the issues that generates the most insecurity, mistrust and suspicion among new users. Cash and paper receipts continue to be the most reliable method in the perception of citizens in Latin America (see G4S-World Cash Report, 2018).

The challenge of identifying cost-effective mechanisms with scalability potential to help close the digital divide leads us to experiment with asynchronous digital aids (tutorials) and virtual training, which could be made available to the public on web portals or online platforms. contents.

Are these types of impersonal resources capable of generating skills and, above all, trust in digital matters, particularly those related to financial services? One of these conducted experiments answers this question.

3

Results and lessons learned from the experiments

On December 15 of 2021, UNDP in coordination with the Ministry of Tourism (MITUR) and the Salvadoran Tourism Institute (ISTU), through a symbolic event, began the delivery of tools and equipment of “digital service baskets” to entrepreneurs, micro and small businesswomen of the country’s recreational parks, for the promotion of digital and financial inclusion. The equipment and tools include smartphones and mobile connection packages, which are a component of the Inclusive Digital Baskets.

Image 1. Microentrepreneur enrolled in Digi-Chiquihuites receives her digital basket at the Apulo Recreational Center



Source: Taken from the Digi-Chiquihuites photo gallery. Tammy Cabrera/UNDP El Salvador

The learning objectives proposed for this learning cycle on inclusive digitalization were the following: (a) test the effectiveness of digital baskets to generate positive digital attitudes, trust and skills in digital technologies, (b) test the effectiveness of digital helpers in the indirect use of digital baskets for the generation of positive digital attitudes, trust and skills in digital technologies, (c) prototype a model of digital service promoters and digital service help points as a tool for close the digital divide, (d) learn about the effectiveness of video tutorials and their combined effect with virtual training to influence trust and knowledge about digital financial services.

3.1 Learnings about the effectiveness of digital baskets and digital helpers

The Digi-Chiquihuites project sought to influence the increase in digital capabilities of vulnerable sectors of the Salvadoran population that have been affected by the COVID-19 pandemic. Its intervention is through the delivery of mobile devices, connectivity and a training program in digital skills with people who run businesses in the tourism sector. In this sense, we sought to know about the effectiveness of these baskets on attitudes towards digital technologies.

In addition, some project participants were assisted by digital assistants designated by themselves (generally young family members), to support them in receiving the training and serve as a guide to facilitate access to services and products that benefit their businesses and their access to digital citizen services, so it is also interesting to know if the benefits of these baskets can be used indirectly.

Image 2. Microentrepreneurs participating in the face-to-face component of the Digi-Chiquihuites training program



Source: Taken from the Digi-Chiquihuites photo gallery. Tammy Cabrera/UNDP El Salvador

Box 1. Hypotheses to test about the effect of digital baskets and helpers

Hypothesis A1: If people who run businesses receive mobile devices, training in digital skills and connectivity, then attitudes towards the use of digital technologies in their businesses improve.

Hypothesis A2: If people who run businesses receive mobile devices, training in digital skills and connectivity, then they improve skills for the use of digital technologies in their businesses.

Hypothesis A3: If people who run businesses receive mobile devices, training in digital skills and connectivity, then they improve trust in the use of digital technologies in their businesses.

Hypothesis A4: If people who run businesses receive mobile devices, training in digital skills and connectivity through digital assistants, then attitudes towards the use of digital technologies in their businesses improve.

Hypothesis A5: If people who run businesses receive mobile devices, training in digital skills and connectivity through digital assistants, then they improve skills for the use of digital technologies in their businesses.

Hypothesis A6: If people who run startups receive mobile devices, training in digital skills and connectivity through digital assistants, then they improve trust in the use of digital technologies in their businesses.

The objective of the experiment is to causally identify the existence of an effect of the skills and enablers basket delivery program on the attitudes towards the use of technologies of the beneficiaries (Hypotheses A1 and A4).

Likewise, the experiment causally identified the existence of an indirect benefit in the attitudes and skills of the tenants through the digital assistantships (Hypotheses A2 and A5). Finally, it tested the generation of trust in digital tools (Hypotheses A3 and A6).

The experiment consisted of 3 intervention groups for which their daily attitudes, knowledge and trust towards digital technologies were measured, before and after the Digi-Chiquihuites project was implemented.

Image 3. Helper accompanies a Digi-Chiquihuites participant in her learning process about digital tools for her business



Source: Taken from Digi-Chiquihuites photo gallery. Tammy Cabrera/UNDP El Salvador

Treatment group 1 (red) was made up of 110 entrepreneurs who receive the digital baskets directly (standard treatment). Treatment group 2 (blue) was made up of entrepreneurs who received the digital baskets indirectly through their assistants.

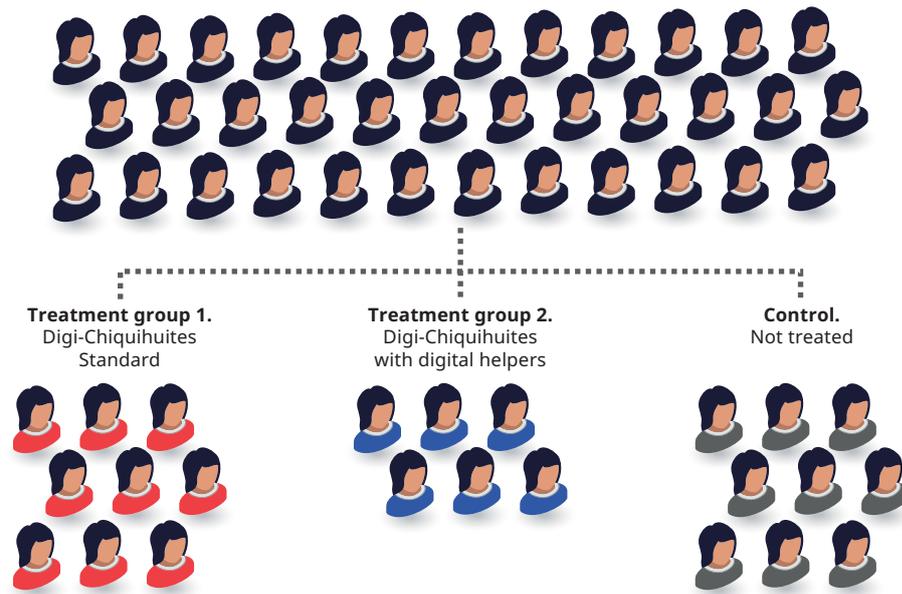
The control group (grey) was made up of 145 micro-entrepreneurs from the San Salvador Ex-Cuartel Market⁵. This group was chosen due to its resemblance to the people who participated in Digi-Chiquihuites: micro-entrepreneurs, mostly women who are linked to the tourism sector, since their sales are mainly aimed at tourists and foreign visitors⁶. This similarity would help control more easily for pre-existing differences between the groups.

Additionally, this group received a symbolic monetary incentive in each round to answer the questionnaire (in the form of \$10 Gift Cards). This was considered necessary because the control group had no connection with the Digi-Chiquihuites project, so there was a high risk of being refused participation in the baseline and follow-up surveys. The figure below shows a schematic illustrating the 2 treatment groups (red and blue) and the control group (gray), before and after the intervention.

⁵ The sample size of the control group was chosen so that the hypothesis test in a t-Student distribution of independent populations has the capacity to detect changes generated by the intervention of digital assistants, which is the smallest treated group, in 80.0% of the experiments (Power) and has a Minimum Detectable Effect of 0.55 standard deviations (an effect of intermediate size, see Cohen, 1988). The confidence level of the test is 95.0% and considers the correction for the Design Effect in Clusters of the tourist centers, with an intra-group correlation of 0.0672, for the proportion of female entrepreneurs with a lot of interest in digital technologies, estimated at baseline of the project.

⁶ The support of the CONEXIÓN Association is appreciated for its collaboration in the field surveys, which made it possible to study the results of these experiments.

Figure 2. Digi-Chiquihuites participants in treatment and control groups



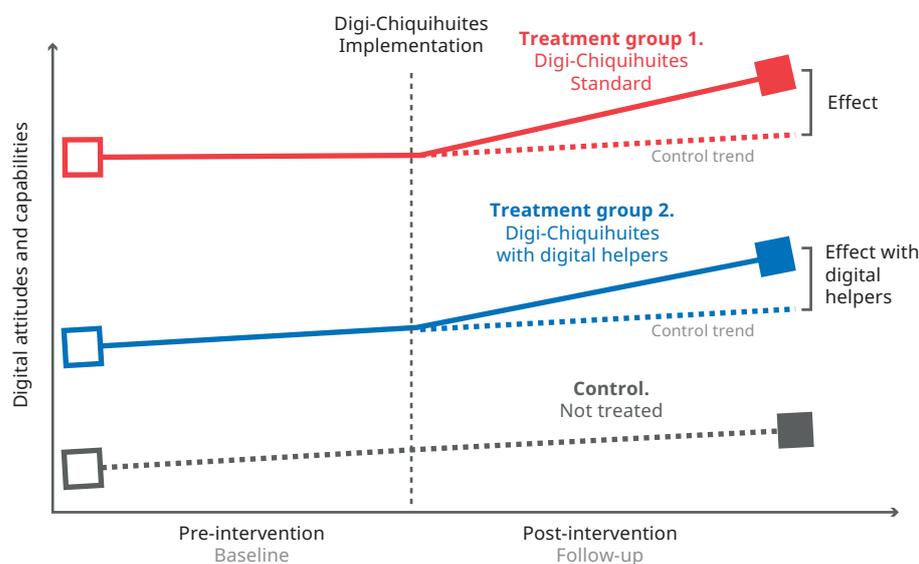
Source: Own elaboration.

The methodology is of a quasi-experimental type, and it estimated the effectiveness of the baskets in increasing positive attitudes, skills and trust towards digital technologies, through the method known as Difference-in-Differences (DiD).

The foundation of this type of design is the causal model of potential results of Neyman (1923) and Rubin (1974, 2005), whose main objective is to estimate a valid counterfactual result. This outcome refers to what would have happened to the same set of subjects in the absence of the intervention.

In essence, if we know what would have happened without the treatment and what actually happened when the treatment was given, then we can estimate some measure of the effect of that treatment. Next, the basic scheme of the Difference-in-Differences model for the quasi-experimental design of Digi-Chiquihuites is presented, under its standard intervention and through digital assistants.

Figure 3. Quasi-experimental design scheme of Difference-in-Differences on positive attitudes, knowledge and digital skills in the framework of the Digi-Chiquihuites Project



Note: No statistical differences in means during pre-treatment were observed the attitudes and ability scores between treatment 1 and treatment 2 groups.

Source: Own elaboration.

Learning 1. The basket of digital services provided by Digi-Chiquihuites, made up of a smartphone, eight weeks of face-to-face and virtual training, mobile connectivity packages, generated positive digital attitudes, knowledge and trust in digital tools among the participants.

The results suggest regarding attitudes towards digital technologies, that there is a significant increase in the group that received Digi-Chiquihuites, compared to the untreated group (16.9%, $p < 0.05$)⁷.

Regarding the knowledge of the use of technologies in the business, significant increases were also observed compared to the control condition (+30.2%, $p < 0.05$). In the same way, the experiment allowed us to estimate an increase in the reporting of skills to make collections by digital means (+29.8, $p < 0.05$), and increases in the skills that the people who participated in Digi-Chiquihuites acquired to promote their businesses. through digital tools and the internet (+28.9%, $p < 0.05$).

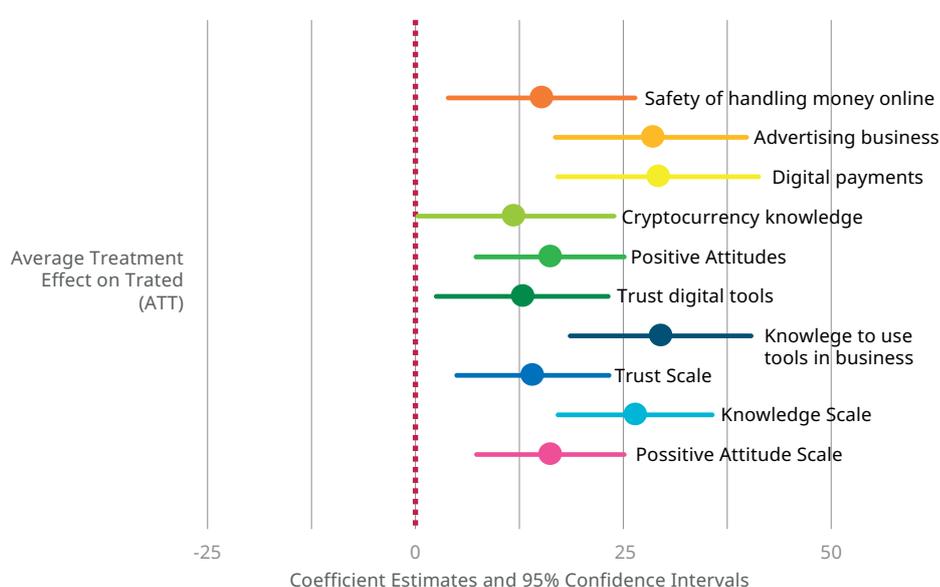
In addition, the results show increases, with respect to the control condition, in general trust in the use of digital tools, such as applications, programs, websites or online resources that can be accessed through mobile devices (+13.9 %, $p < 0.05$).

⁷ The point estimate of the effect is presented in parentheses, followed by the statistical significance at 5% of committing a type I error, also known as a false positive result.

In particular, also in terms of trust in digital financial tools, increases are observed in the sense of security in the use of money online, such as online banking, transfers, collections and payments through cell phones (15.6%, $p < 0.05$).

In conclusion, when examining the estimates of treatment effects on the positive attitudes, knowledge, and trust scales, no evidence was found to reject hypotheses A1, A2, or A3 of the Digi-Chiquihuites standard treatment.

Graphic 1. Estimates of treatment effects by the Difference-in-Differences mode by individuals for Digi-Chiquihuites in standard intervention



Source: Own elaboration.

Learning 2. The benefits of digital technologies can be acquired indirectly through digital assistants, but these effects are smaller.

In the case of the indirect treatment of Digi-Chiquihuites, which was carried out through the digital assistants, statistically significant changes are also observed, but in general with smaller punctual effects than through the standard⁸ or direct. In particular, for the case of indirect Digi-Chiquihuites, accessed through their digital assistants, it shows an increase in positive attitudes towards digital technologies, compared to the control group (11.7%, $p < 0.05$).

Likewise, it was estimated that the indirect intervention generated an increase in the indicator of knowledge of technology use in the business (+17.9%, $p < 0.05$). In addition, the treatment group with digital assistants shows an increase in skills to make payments through digital means in their businesses

⁸ We have called standard Digi-Chiquihuites the intervention in which the participants directly receive the components of the digital basket, especially the training component.

(+16.8%, $p < 0.05$). Also with the treatment in this group, significant increases were estimated in the skills that people obtained to promote their businesses through mobile devices and the Internet (+16.5%, $p < 0.05$).

Image 4. Testimony of a Digi-Chiquihuites project participant



Source: Design by Tatiana Orantes.

Learning 3. Although the figure of the assistants did contribute to generating knowledge and trust in digital tools, no evidence was found that it managed to generate trust in the use of digital financial tools.

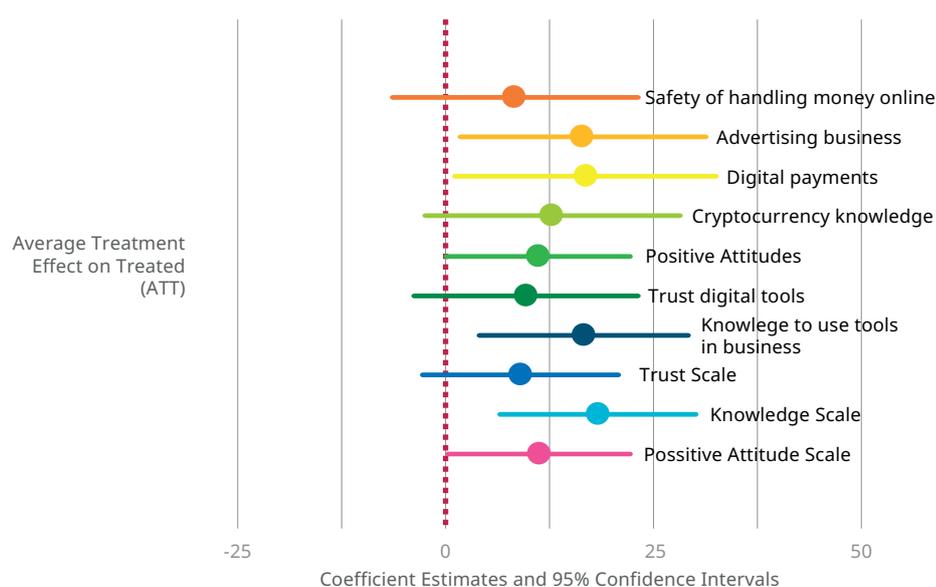
On the contrary, although a positive effect on changes in knowledge in the use of cryptocurrencies was estimated, this was not statistically significant (+12.7%, $p > 0.05$). Additionally, no significant increases were observed in the sense of security that the people who received the indirect treatment have in managing money online, for example, the use of online banking, transfers, collections and payments through cell phones (8.3 %, $p > 0.05$).

On this aspect it is important to reflect that in some cases the digital assistants are quite young people. Although the average age of these assistants was 33 years old, some were only 16 years old, so the mistrust of the owners about managing the money of the business by digital means could vary as the age of the people who perform the job increases. role of digital assistants. However, this is something that should be tested in new experiments, since the sample

size of Digi-Chiquihuites does not allow⁹ for sufficient statistical power to detect small changes in age subgroups.

In conclusion, no evidence was found to reject the hypotheses related to indirect treatment managed through digital assistants, on knowledge and skills (Hypotheses A4 and A5), but hypothesis A6, on trust in digital tools and handling of online financial resources.

Graphic 2. Estimates of the treatment effect by the Difference in Differences model for Digi-Chiquihuites in intervention through digital assistants



Source: Own elaboration.

3.2 Learning about models of digital service promoters and digital service kiosks as a tool to close the digital divide.

Having observed during the implementation of Digi-Chiquihuites that the help coming from a circle of people close to the microentrepreneurs was in demand and effective, 2 models of digital service consultancies were tested through promoters and service kiosks in 5 recreational parks in the ISTU intervened by Digi-Chiquihuites and in the Central Park of Antiguo Cuscatlán (not intervened), with the aim of learning about the effectiveness of these mechanisms to supply the role of digital assistants in the form of a public service and contribute to the reduction of the digital gap.

This is a local proposal based on observation, information from semi-structured interviews, and the application of empathy maps developed with users, but it also inspires from the experience of the neighborhood digital service aid mo-

⁹ Power is the probability that the hypothesis test correctly detects that an intervention had an effect, when this is true. Hypothesis tests with low power have a higher probability of making type II errors, which means obtaining false negative results.

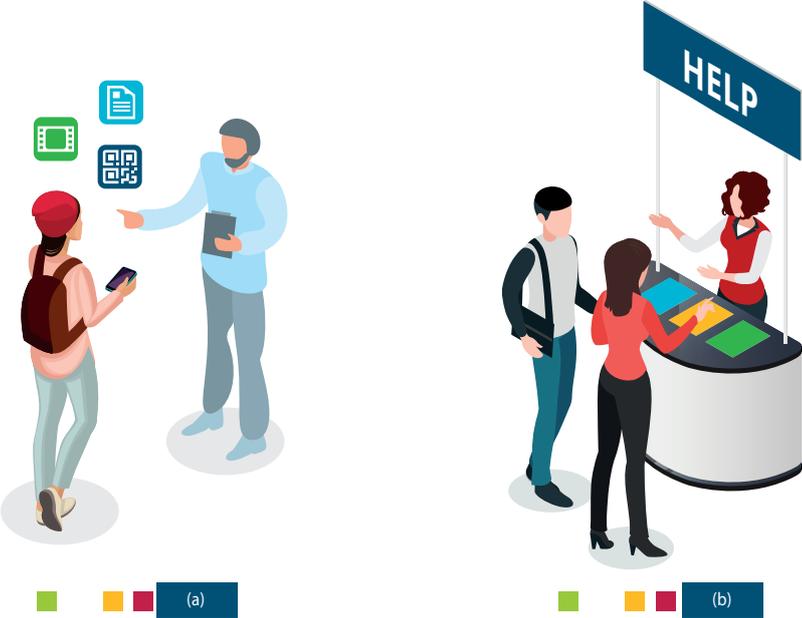
del, “Con Vos” experimented by the UNDP Accelerator Lab in Argentina. In this model, local store owners help people in the community complete online transactions, such as citizen paperwork with the municipality.

In the case of the exercise developed in El Salvador, it was located in a pre-experimental phase known as prototyping. Prototyping is an approach to developing and testing ideas at an early stage, before committing resources on a large scale to their implementation. Generally, these methods are used in the early stages of the development cycle of products and services, to test how they work. In general, prototyping tends to occur before or in preparation for a pilot exercise (see NESTA, 2011).

In particular, it sought to test two models of assistantships to help close the digital divide: the first consists of a promoter of digital services who visits the tenants of tourist centers and offers assistance on how to access a series of digital services¹⁰.

The second model consists of fixed points where there is a promoter, who has been trained to answer queries on predefined topics, related to how to access digital services. The figure below illustrates both models.

Figure 4. Models of promoters ^(a) and kiosks ^(b) to provide help for digital services



Source: Own elaboration.

¹⁰ Examples of digital services are: 1. Receive payments through the cell phone, 2. Keep track of expenses and income with Apps, 3. Set up and use social networks in the business, 4. Sell through social networks, 4. Present products or Internet services, among others.

The following are hypotheses that sought to be tested through this exercise.

Box 2. Hypotheses to be tested on the models of promoters and digital service

Hypothesis B1: If people who run businesses are visited by a “digital service promoter” who offers a predefined menu of digital aids, then entrepreneurs increase a positive attitude towards the digital technologies.

Hypothesis B2: If people who run businesses are visited by a “digital services promoter” who offers a predefined menu of digital aids, then entrepreneurs trust that they will be able to replicate what they have learned on their own.

Hypothesis B3: If people who run businesses visit digital help kiosks with a “digital services promoter” that offers a predefined menu of digital supports, then female entrepreneurs increase their positive attitude towards digital technologies.

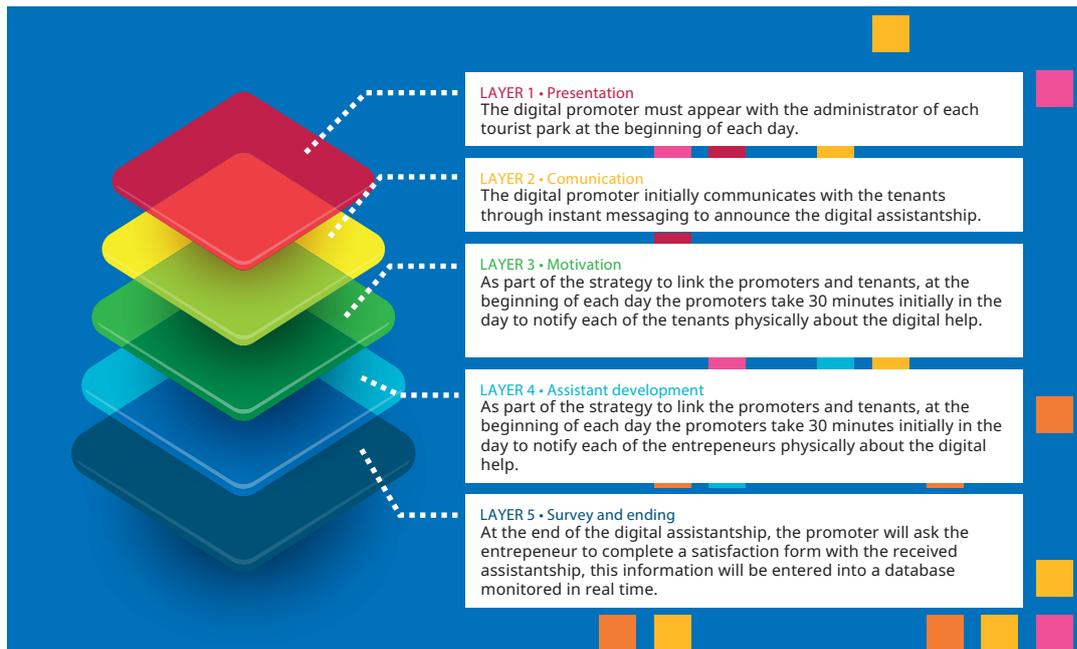
Hypothesis B4: If people who run businesses visit digital help kiosks with a “digital services promoter” that offers a predefined menu of digital supports, then entrepreneurs trust that they can replicate what they have learned on their own.

Hypothesis B5: If people who run enterprises compare between both assistantship models, they express more trust in digital help kiosks than in promoters or vice versa.

The experiment tested the effectiveness of the digital assistantship prototypes, through 4 moments. In the first place, the co-design of the digital services menu with users in tourist centers, the test of live assistantships with users, the test of the model of promoters and digital service kiosks to: (a) generate positive attitudes towards technologies digital, (b) digital skills, (c) safety and trust.

This exercise had the support of CREA Consultores, who, at the request of the Accelerator Labs, trained two digital promoters, and tested the initial menu of digital services. Finally, they were in charge of materializing the prototype of two digital service kiosks and took it to the field under the following service model.

Figure 5. Attention layers for digital assistantships (promoters, kiosks)



Source: Prepared by CREA Consultores.

During the field work, six iterations were carried out (one for the live tests of the digital services menu, two for the promoters model and three for the booths model) in the selected recreational parks. The learning derived from this exercise has a quantitative component, but its learning is based mainly on the qualitative findings, which arise from 101 interactions of promoters and digital service kiosks with people who requested help in the selected parks, between the end of April and mid-June 2022.

During the care process with assistantships, there was a majority participation of 82 women, equivalent to 81% of the total number of people served by both models, compared to 19 men, corresponding to 19% of the total. The average age of the participants was 50 years. That said, the main learnings are reported below.

Table 1. Services provided in tests of digital service models

Center visited	Assistance provided		Persons assisted		Average Ages
	Promoters	Kiosks	Men	Women	
Parque Balboa	15	8	13.0%	87.0%	51
Puerta del Diablo	4	4	0.0%	100.0%	45
Apulo	12	4	31.3%	68.8%	55
Atecozol	14	6	5.0%	95.0%	48
Mercado del Mar	14	6	25.0%	75.0%	54
Antiguo Cuscatlán	14	0	35.7%	64.3%	47
Total	73	28	19.0%	81.0%	50

Source: Own elaboration based on data collection carried out by CREA Consultores.

Learning 4. The models of promoters and digital service kiosks generated positive attitudes towards the use of technologies, but not trust in being able to replicate what is taught.

Although the prototyping exercises are generally observational and qualitative, two indicators were designed to help verify the hypotheses proposed. The first of these indicators is about positive attitudes towards digital technologies, where the usefulness of technologies before and after counseling is examined through survey interviews.

$$POS = \sum_{i=1}^N (I1B_i - I1A_i) / n$$

If $POS \geq 0$, the effectiveness of the prototype to generate positive attitudes towards digital technologies is not rejected.

The result of this indicator for the digital service promoters model was 1.25, $p < 0.05$. For the case of the shed model, the result was 1.57, $p < 0.05$. With these results, hypotheses B1 and B3 are not rejected, that this type of service generates positive attitudes towards digital technologies among its users.

In addition, for the generation of skills for handling digital tools, an indicator of self-reported knowledge gains was designed after the assistance was provided,

under the question: How confident are you that you can repeat this procedure again on your own? The lowest level of the scale is “I can’t do it again on my own” and the highest level is “I can do it again on my own”.

With the answered scales, it was possible to obtain a global indicator of participants, to measure the self-reported average gain in skills for handling digital tools:

$$HAB = \sum_{i=1}^N (I2_i[1y2] - I2_i[3]) / n$$

If $HAB \geq 0$, the effectiveness of the prototype to generate skills is not rejected.

The result of this standardized indicator on skills for the model of digital service promoters was 3.6, $p > 0.05$. In the case of the booth model, the result was 4.0, $p > 0.05$, with which hypotheses B2 and B4 are rejected, regarding that this type of service generates self-reported gains in skills for the use of digital tools, among its users. and users.

One aspect that had to be considered in this series of tests is that the offer of baskets of digital components to protect livelihoods made by Digi-Chiquihuites had a significant acceptance in tourist parks, so it was considered pertinent to also test these models in a non-intervened space to find out how it works and if there were substantial differences in receptivity on the part of the users.

In the tours carried out in Antiguo Cuscatlán, it was noticed that despite not knowing about the Digi-Chiquihuites Project and not having received a digital basket, there was a good reception and demand from micro-entrepreneurs to receive advice on digital service management from promoters. of digital services. In particular, this was the only model that was in demand, which provided a total of 14 consultancies, compared to none in digital booths.

Regarding confidence in the two types of models, responses were collected from the assisted people about safety in physical environments and confidence in approaching to request help. Specifically, no significant differences were found between both models.

In general, the results of this pre-experimental phase suggest that the models of promoters and digital service kiosks are a promising bet to address the challenges of the digital gaps in owners and workers of MSEs, and that they can be

used in environments that do not they have been exposed to dedicated interventions, such as that of Digi-Chiquihuites.

However, it is recognized that these developments must continue to be tested in a quasi-experimental or experimental phase, in order to have robust evidence of their effectiveness, before large-scale implementation. In addition to the quantitative findings, there are other lessons learned, derived from qualitative evidence and observation, which are presented below.

Image 5. People receiving support services on digital issues from a promoter and at a stand in Mercado del Mar and Parque Balboa



Source: Image taken from the gallery of UNDP and CREA Consultores.

Learning 5. The models of digital promoters received more acceptance than that of the digital kiosks among microentrepreneurs.

Due to the fact that entrepreneurship and micro-enterprises are often one-person businesses, the visits of the promoters is what is most comfortable for them, since it allows them to receive personalized advice on digital services, without neglecting the attention of the business and its clients. Other factors as well, such as time and distance, made receiving the assistantship at their business premises more convenient.

This is why, of the total number of interactions carried out (101), the largest number was concentrated in the model of promoter of digital services, with 72% compared to 28% of people who approached to request assistance services to booths located at strategic points within the parks and tourist centers.

Learning 6. Although these advisory services are well received, it is important to use techniques that reinforce the legitimacy of the service

Identification: it is recommended in the process of digital assistantships to grant distinctive promoters in the field such as badges, shirts with logos, that even show a tourist care telephone number, as well as other distinctives so that the people to whom the advice is offered identify the origin and legitimacy of the service.

Gratuity: Reinforcing the free service is a key factor as an entry point, since during the first interactions carried out in the field it was possible to assess that the advisories were not clear as to whether the service was free, which caused rejections. On some occasions, people did not want to receive advice for fear of having to pay for it.

Although this was not part of the original design, its need became apparent as the interactions progressed, so in the next iteration a visual pin was incorporated into the uniform of the digital promoter where it is stated that the advice was free, the visual design of the booth or kiosks, exposing the free service. This made it easier to capture the attention of people running businesses.

Image 6. Visual elements used to reinforce the free service of promoters and kiosks



Source: Prepared by UNDP and CREA Consultores.

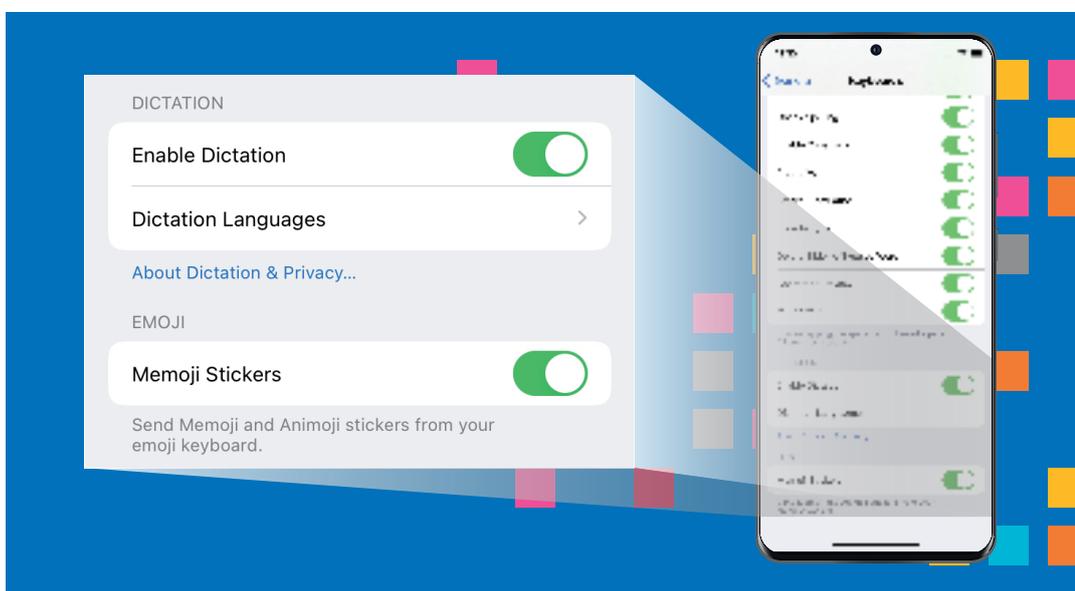
Learning 7. Digital technologies can be used even in contexts of illiteracy

In the tourist centers Mercado del Mar and Atecozol, specific cases were found of tenants who did not know how to read or write, but who were interested in receiving support to access digital tools for their businesses, for which the assistantship was offered in three steps: (a) Identification of needs, (b) learning and practice, (c) application.

Identification of needs: the tenant was asked to comment on the main needs they have in the use of technologies, so both tenants mentioned that they wanted to start by correctly handling the mobile device, basic actions such as making calls, and adding contacts.

Learning and practice: the promoter proceeded to identify the “dictate” application that mobile devices contain natively, this allowed the tenants to dictate the names of their contacts to the cell phone when filling out the digital agenda fields, then proceeded to explain the mechanism to be able to search for a contact using “emojis” figures to identify the contact you want to call.

Image 7. Activation of dictation options on an Android device



Source: Prepared by CREA Consultores.

Application: After carrying out two practices, the promoter proposes to the assisted person that they carry out the exercise at that moment, so that they begin to gain confidence and can repeat it independently and without help. In these cases, it is recommended that the person served be accompanied by a fa-

mily member or a collaborator from their business so that they can familiarize themselves with the procedures that are being developed and reinforce them.

The digital divide on people who cannot read or write is high, so it is convenient to schedule sessions of between 30 and 40 minutes, it is also recommended to use videos where there is a voiceover that narrates the step by step to use the tools to be used. It is recommended that in front of a person who does not know how to read or write, special emphasis is placed on the recognition of icons to be able to follow the process of calls, voice notes, recognition and use of devices (basic use).

An alternative menu proposal for digital services for people who cannot read and write is as follows:

- Basic use of the mobile device.
- “Dictate” tool
- Make calls / end calls
- Storage of contacts in the digital agenda or contacts app.
- Introduction to the use of WhatsApp (sending voice notes, sending photos).

Possibly, this could be extended to people who have some kind of visual or hearing impairment.

Learning 8. The demand for digital assistants prevails even in the model of promoters and kiosks.

During the service, the tenants repeatedly asked their children or relatives to come to listen to the assistantships and learn with them. The interactions showed that expanding digital assistantships not only to them (tenants of business premises), but also to family members who support them in their businesses was a necessity, since in many cases through them they can create content, use social networks and make bank transfers, etc. to strengthen their businesses. On some occasions, they also mentioned that it would be an advantage if the staff they have hired could be trained in digital assistantships.

In doing so, the digital assistantships were well received by said staff. In general, this type of situation occurred mainly with older female tenants, who had a

high digital gap, so it was much more efficient to rely on a person who is familiar with technology and with whom they have daily contact.

These situations occurred mainly in the Apulo tourist center and the Atecozol tourist center. On the other hand, the tenants of the Apulo tourist center chose to learn themselves together with their families in order to have two or three people in the business with knowledge to generate content on their social networks and have a greater margin of maneuver between the daily work and the investment of time to interact in networks with their clients.

Learning 9: The most requested assistances revolved around the management of WhatsApp Business and Facebook, as tools to promote their businesses online.

This is a common factor in all six locations visited during the testing of the models. During the interactions they were also offered to use other types of social networks such as Instagram or Twitter. However, the tenants refused since they mentioned that most of their clients do not look for them through these communication channels.

The reasons why they prefer to use these two specific communication channels (WhatsApp Business and Facebook) are the following:

- Most of their customers use these communication channels, mainly to search for products and services.
- These are tools that they know and are much more familiar with, so they do not require any technical knowledge (at least at a basic level).
- The applications can be installed on low- and mid-range devices, it is not necessary to have a high-performance device and that makes it attractive for tenants, because the technological investment is minimal to have effective communication with their clients.
- Both tools offer utilities to create product catalogs, instant messaging, calls and send photos, making it much easier for them to present their products and services.
- These tools are also used to communicate with their suppliers since the immediacy of being able to communicate is much easier through a mobile device than doing it through a medium such as a computer and email.

Although these are the main tools with which users of the service associate the use of technology, there are other types of tools that can be explored for future iterations, including digital tools for content editing, accounting, finance, inventories, among others.

3.3 Learning about the effectiveness of video tutorials, the role of trainers and their effect on knowledge and trust in digital financial services

The merchants of the ISTU recreational parks network benefited from the training program of the skills creation component provided by the project. The content of the training program covered four main topics, among which was the teaching of digital tools for financial inclusion.

Financial inclusion is the ability to access and use a set of appropriate and responsibly provided financial services in a properly regulated environment. Mobile money, digital identification and e-commerce have given many people the ability to save and conduct business without using cash (UNDP, 2019).

However, it is also one of the topics that generates the most insecurity, mistrust and suspicion among new users. Cash and paper receipts continue to be the most reliable method in the perception of citizens in Latin America (see G4S-World Cash Report, 2018).

Among the tenants of the ISTU parks, 84.4% of the businesses charge for their products and services in cash, 10.4% in cryptocurrencies, 1.3% with QR, and also 1.3% through bank transfers.

People who said they do not charge their businesses through digital means mentioned first that they do not understand anything about it (43%), followed by fear and lack of trust in such payment methods (34%).

Although digital financial services can give way to greater comfort, simplicity of procedures, saving time in procedures and eventually, lower costs in relation to the use of cash, lack of knowledge and mistrust limit access for fear of data theft or possible fraud (see IDB, 2021).

The objective of the experiment is to causally test the effectiveness of remote digital aids in the form of video tutorials used in skills training processes (Hypotheses C2 and C4), and especially to test the effect of these resources on the generation of trust in financial services accessed by digital means (Hypotheses C1 and C3).

Box 3. Hypotheses to test about video tutorials and online training on digital financial services

Hypothesis C1: If small business owners are exposed to short video tutorials on digital financial services, then they increase trust in these services.

Hypothesis C2: If small business owners are exposed to short video tutorials on digital financial services, then they increase their knowledge of these services.

Hypothesis C3: If small business owners are exposed to short video tutorials and live training on digital financial services, then they increase trust in these services.

Hypothesis C4: If small business owners are exposed to short video tutorials and live training on digital financial services, then they increase their knowledge of these services.

For the experiment, 77 entrepreneurs enrolled in the training program of the Digi-Chiquihuites Project and who attended virtual sessions on the Zoom platform of the module on financial tools for entrepreneurship were invited. Of that total, 38 were assigned to the control group and 37 to treatment group 1. The participation rate that was counted was 74%.

The experiment consists of two treatment steps and a control group. Random assignment guarantees that each individual has the same probability of participating in treatment or control and is the most rigorous form of causal inference, because by correctly randomizing, selection bias and the observable and unobservable characteristics of the subjects are eliminated. They sway between groups.

As the participants were randomly assigned to each of the two groups, both their observable characteristics (such as age, years of schooling, socioeconomic status, etc.) and those unobservable characteristics (motivation, intelligence, talent, commitment, etc.) will be statistically equal (known as balancing), so any difference between the groups will then be due to the intervention alone.

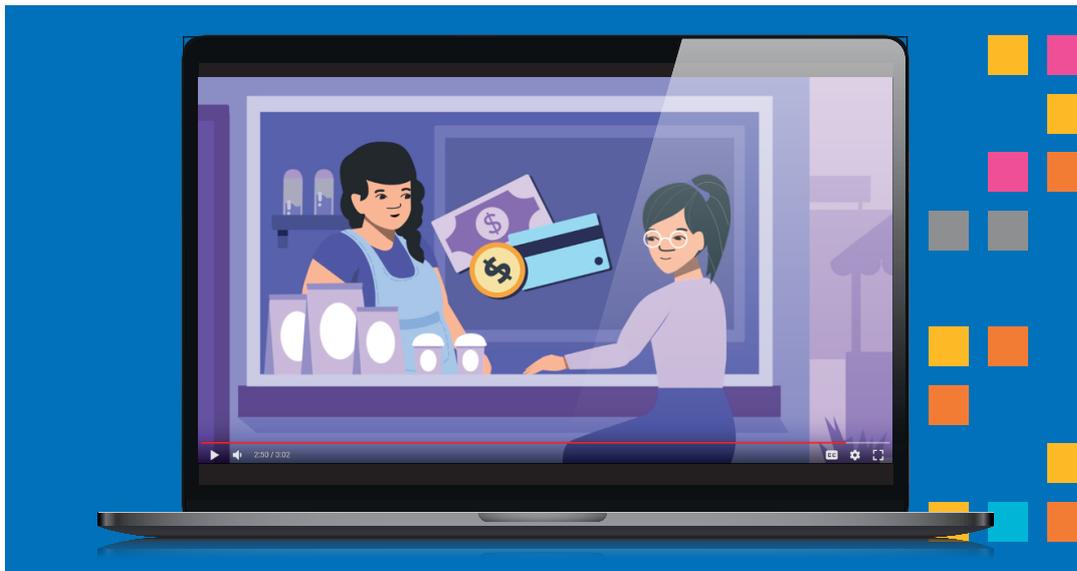
This was done in an effort to find a counterfactual result: the equivalent of observing the result of a group of subjects receiving a treatment and observing what would have happened if they had not received it.

The procedure described is that of a randomized controlled trial (RCT). However, for ethical reasons and to avoid denying potential benefits to the participants, the treatment was delivered to both groups, but in a phased manner (Phase-in trial, see Dufflo, Glennerster & Kremer, 2006). That is, at different times of the experiment, as described below.

The assignment to the groups was made previously and the experiment was carried out virtually through Zoom, for which two different invitations were created.

In both video calls, the procedure changed for the groups (control and treatment). The treatment group was first presented with the video tutorial on digital financial tools and once it had been played, the participants were asked to answer two items on knowledge and trust.

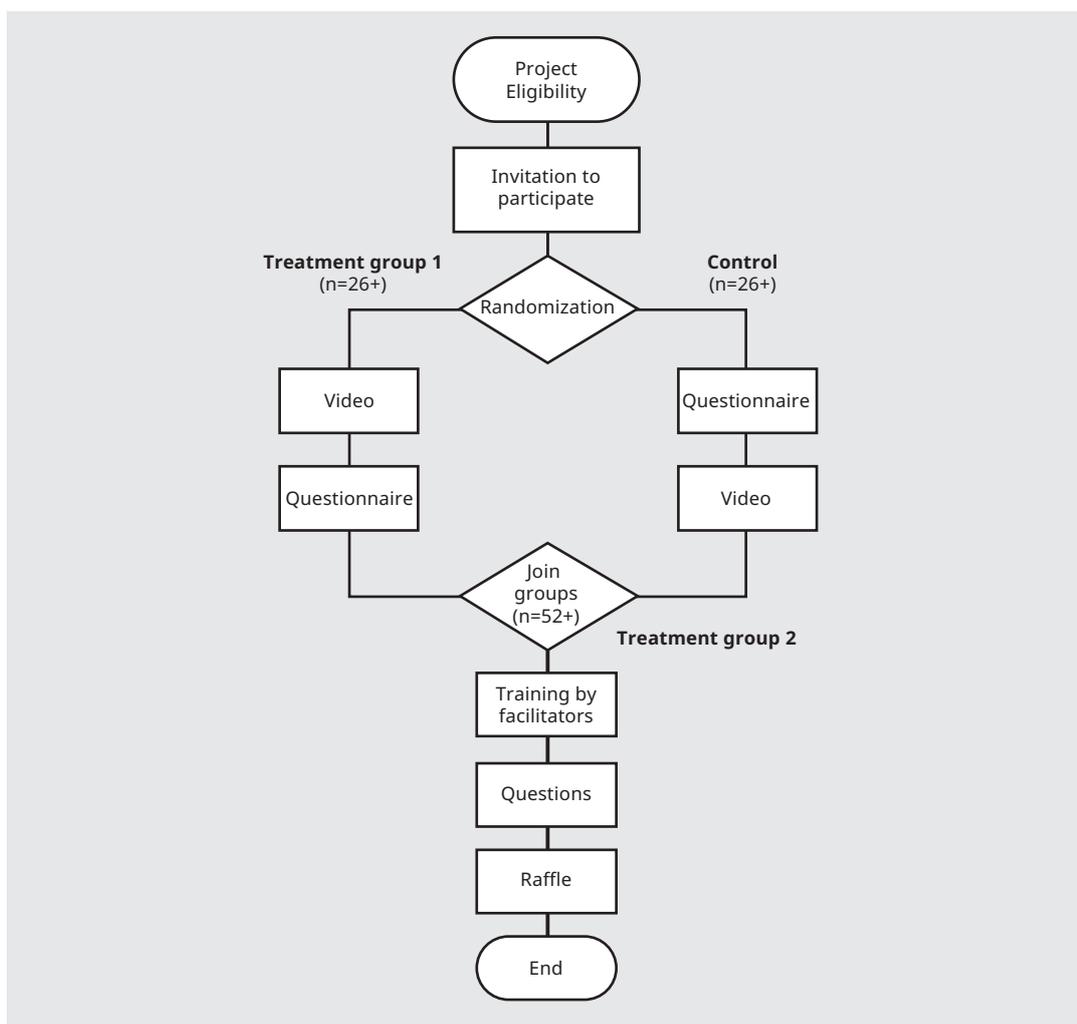
Figure 6. Video tutorial on the digital financial tool of the Digi-Chiquihuites “Connect with your business” program



Source: Prepared by Asociación CONEXIÓN, for the Digi-Chiquihuites project.

In parallel, the randomly assigned control group was first presented with a questionnaire with the same two items on knowledge and trust in digital financial services. After answering the questions, the video tutorial on digital financial tools was played. For both groups, the responses were stored in a database, identifying the group they belonged to. Below is the outline of the procedure followed.

Figure 7. Scheme of experiment on digital financial services carried out in VC Zoom



Source: Own elaboration.

After the first treatment, the Zoom sessions were merged and the second treatment was completed. Which consisted of a class given by two trainers on the same topics covered in the video tutorial. This session lasted approximately 12 minutes, and apart from delving into the topics, questions from the participants were answered. At the end, the participants were asked to answer the same questions, which concluded the experiment, but it was followed by a raffle that had been announced as a resource to encourage participation and retain permanence, since this is important for maintaining the power of the test.

An important aspect to keep in mind is that when conducting field experiments, only the program can be offered, but it is the people who will decide to receive it or not. So in this case what is known as imperfect compliance with the protocol occurred, since some people invited to the treatment did not participate in the experiment (one-sided non-compliance).

As this scenario is common in the development of field experiments, this was anticipated and in practice it went from estimating the Average Treatment Effect (ATE), to estimating the effect known as Intention-to-treat (ITT) and specifically it was possible estimate through 2-Stage Least Squares (2SLS), a local measure of treatment (LATE) known in this specific case as Complier Average Causal Effect (CACE)¹¹. This is the measure of interest in the analysis of this experiment (see methodological annex for more details).

Learning 10. One-time exposure to video tutorials did manage to generate increases in knowledge about digital financial tools in a short time. However, these resources alone failed to build trust in managing money online.

First, no significant evidence was found that a single-time exposure to a video tutorial builds trust in managing money online¹² among experimenters compared to the control condition (+10.8%, $p > 0.05$). However, positive and statistically significant effects were estimated in favor of self-reported gains in knowledge about digital financial services (+15%, $p < 0.1$)¹³.

Learning 11. Human interaction in virtual training processes, even if it is brief or carried out through virtual means, is effective enough to generate trust in the use of digital financial tools.

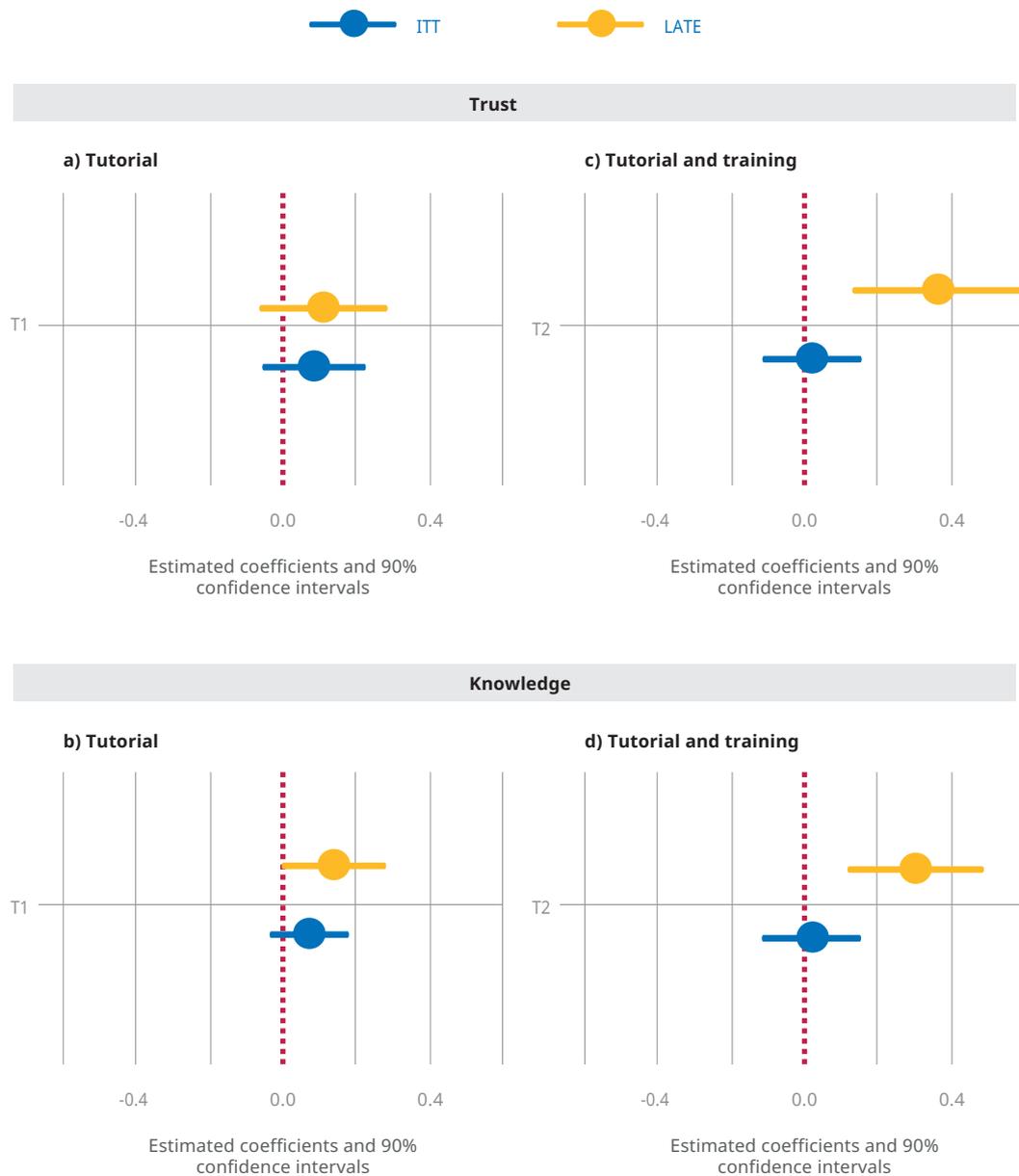
Finally, the results of the experiment suggest that the combination of video tutorials and short training sessions produce positive changes in the trust of the participants about managing money online (+37.0%, $p < 0.05$), while this is the area that improved the most relative to the control condition. Furthermore, this combination was able to produce self-reported gains in knowledge (+29.3%, $p < 0.05$).

¹¹ Details on the use of 2SLS for the estimation of Local Treatment Effects can be found in Angrist & Pischke, 2014, as well as in Gertler, et. to, 2016.

¹² Money managed through online banking, transfers, collections and payments through cell phones.

¹³ Significant at the 90% confidence level.

Graphic 3. Estimates of Intention-to-treat effect and Local Average Treatment Effect in a randomized experiment on digital financial services



Nota: ITT refers to the Intent to Treat effect and LATE refers to the Local Average Treatment Effect or Compliers Average Causal Effect (CACE).

Source: Own elaboration.

Remembering that the objective of the Accelerator Labs is to generate actionable intelligence from the results of exploration, mapping of solutions and the implementation of portfolios of experiments, it is important to translate the learning of each of the experiments in ideas for action, which can be materialized in many ways: new concepts of activities and projects; new teaching resources; care models; inputs for public policies and more.

In the case of the inclusive digitalization learning cycle that was designed in the context of the Digi-Chiquihuites project, the objectives were: (a) to test the effectiveness of digital baskets to generate positive digital attitudes, confidence and skills in digital technologies, (b) test the effectiveness of digital helpers in the indirect use of digital baskets for the generation of positive digital attitudes, confidence and skills in digital technologies, (c) prototype a model of digital service promoters and service help points as a tool to close the digital divide and (d) learn about the effectiveness of video tutorials and their combined effect with training to influence trust and knowledge about digital financial services.

4.1. The Digital Basket 1.0.: A promising model for inclusive digitalization

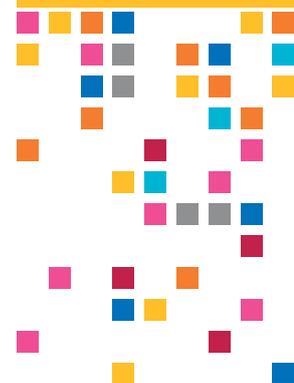
From the implementation of the Digi-Chiquihuites project and the learning cycle on inclusive digitalization of the Accelerator Labs, it can be concluded that micro-enterprises, as well as the people who lead them (mostly women) and their families understand the importance of digitalization in various areas of their lives and that, through a “basic basket” with access elements, training and enablers, they can increase their levels of adoption and confidence in digital technologies. digital technologies significantly.

The first version of the digital basket had significant effects in terms of knowledge of the use of technologies in the business, making digital payments, the ability of people to promote their businesses on the internet through digital tools, among others.

Probably the most relevant finding of the learning cycle is that social dynamics and support structures are key to accelerating the adoption of behaviors and use of digital tools, particularly in groups such as the Digi-Chiquihuites project participants (women on average over 50 years of age), where there are additional barriers to entry imposed by internalized stereotypes of inability to use digital tools. Barriers that can be easily overcome through the creation of support networks among peers, mentoring and figures such as “digital assistants” as demonstrated by the implemented experiments.

4

Conclusions and ideas for action



Through this portfolio of experiments, the El Salvador Accelerator Labs sought to understand the opportunities and limitations of these figures and how their best characteristics could be emulated through different models, with promising results that are concluded in the next section.

The portfolio of experiments also helped generate relevant conclusions about the role of audiovisual resources as part of capacity building models that can be scaled up, in combination with personalized attention from tutors or facilitators. Having proven its effectiveness in “breaking the ice” in the adoption of digital behaviors and knowledge, the existence of free audiovisual resources would allow resources to be focused on personalized attention in future iterations of the digital basket.

However, despite the initial effectiveness of the digital basket model, for it to be scalable, innovative models should be considered that optimize existing digital literacy resources and efforts and leverage support structures at different levels: (1) at the family nucleus, (2) at the community level and (3) at the institutional level by local or central governments and even, in association with companies and business chambers in sectors such as banking, telecommunications and the distribution of mass products.

4.2. Digital helpers and support networks: collective intelligence for bridging the digital divide.

One of the clearest manifestations of the importance of social support dynamics for digitization is the recurrence of the figure of “digital assistants” that was identified from the early stages of the project (baseline survey, semi-structured interviews and participatory workshops), as well as from analog inspiration with the initiative of the “Con Vos” network of the UNDP Argentina Accelerator Lab. Through the portfolio of experiments, relevant conclusions were generated on this topic.

People can access the benefits of digital technologies through intermediaries, but up to a certain level. Although the figure of digital assistants (with basic digital knowledge) contributed to generating knowledge and confidence in digital tools, no evidence was found that managed to generate confidence in the use of money by digital means. In other words, there is great potential to train basic digital skills in people previously recognized as “digital helpers” and for them to become replicators at local and community levels. However, to increase a person’s trust specifically regarding digital fi-

nancial tools, it is necessary to generate “credentials” or other mechanisms that allow greater certainty about the security and reliability of sending and receiving money by digital means.

Although many people have natural digital helpers, the results of the testing of the digital care booth and digital promoter models demonstrate the potential to emulate characteristics such as closeness, trust and flexibility as part of programs for inclusive digitization or support for MSEs. In the case of this intervention, the model of digital promoters had the best reception and presented the greatest opportunities for scaling.

However, these models have been tested in a pre-experimental phase, so it is recommended to continue testing these models through quasi-experimental and/or experimental methods for large-scale implementations.

4.3. Hybrid channels and resources for scalability

As verified through this intervention, basic resources such as video tutorials can have a positive impact on the understanding of basic concepts about digital technologies, even if they fail to move the needle in the generation of trust and, specifically, when it comes to digital finance.

Likewise, it was proved that, to generate such important trust, the involvement of a facilitator is key. This is how the use of short-term and easy-to-understand audiovisual resources (which can be seen over and over again) to generate basic knowledge would allow facilitators to focus their time on building trust through didactic tools of “learning by doing”, making future interventions for inclusive digitization more cost efficient.

Additionally, although the Digi-Chiquihuites project produced original content through the training program, adapted to this specific audience, its environments, idioms and specific needs, there are also educational materials in different open-use (or licensed) multimedia formats on the which efforts of this kind could be leveraged.

4.4. From discovery to action

Actionable idea: Digital Volunteering Program

Based on the findings of this learning cycle, the idea of creating a volunteering model that can be adopted by NGOs, companies, municipalities, universities, etc. is conceived, that allows scaling and iteration of the first version of

the digital promoters model, incorporating improvements in the induction and training of promoters; the menu of services available on site; the care model, among other elements. In addition to adding new elements such as a “referral” system for promoters in the field to specialists in different areas of digital technology (digital marketing, design, systems, etc.) for specific services, even in association with companies that could provide some of these services as part of corporate social innovation programs.

Actionable idea: Collective intelligence for inclusive digitalization

One of the mechanisms most used by the facilitators and staff of the Digi-Chiquihuites project to share information, organize events and receive direct feedback from the participants were the WhatsApp groups. The creation of local support groups/networks on digitization issues on platforms such as Facebook and WhatsApp have the potential to contribute to collective intelligence dynamics for joint problem solving, based on the exchange of questions, answers and useful tools. An analog source of inspiration for this proposal comes from the exchange channels between the network of Accelerator Labs, where information, data, good practices and tools are exchanged in real time between more than 90 teams.

However, it is recommended that these groups be moderated by entities, initiatives or NGOs on the subject of support for MSEs and that they have the ability to curate content and interactions and stimulate participation in a positive way.

5.1. New questions about the baskets of digital services and the role of assistants

As experimentation is a continuous learning process, each experiment answers the hypotheses raised and opens the window for new ones to be verified. In this way, from the results of the experiment on the effectiveness of the digital baskets and the assistants, the following questions arose to be answered in future experiments.

The components of the following versions of digital baskets

As already mentioned, these first baskets that integrated mobile devices, a training program in digital skills and mobile Internet connectivity, have been shown to be effective in generating positive attitudes towards digital technologies, skills and confidence. Which gives elements for the scalability of this intervention.

However, it is convenient to continue learning about different variants of digital service baskets, their components and in particular depending on the various business profiles to which these baskets are directed. For example, how the component needs of a digital basket vary for a micro and a small company. Knowing about the effectiveness of different intervention variants will make it possible to identify which baskets are more effective and under what context.

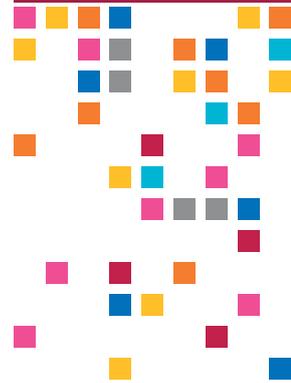
The profile of the digital assistants

It was shown that the people who signed up for the Digi-Chiquihuites project through digital assistants experienced positive changes in the generation of knowledge to use digital technologies in their business, but they did not generate enough confidence in online financial services through, so the question arises how the age of digital assistants influences the generation of trust.

Likewise, knowing that both treatments had positive effects on the aspects mentioned above, the question also arises as to how the ages of the beneficiaries influence the results of the baskets for the generation of positive attitudes towards digital technologies, confidence in these and skills. digital. It is possible that there are important changes that help to differentiate different models of baskets, adaptable to the ages of the people at the center of inclusive digitization programs.

5

New questions for experimentation



Also, although the profile of the assistants in Digi-Chiquihuites is known, it is important to experiment with variations in the characteristics of these people in order to estimate which ones are more effective in generating positive digital attitudes, knowledge and trust in digital tools. What profile should the digital assistant have, in terms of observable variables, such as the last academic level completed?

5.2. New questions about the promoter and digital service booth models

The role of online support communities

The promoter and digital service kiosks models have a limited time scope for each person requesting services. However, this service can serve as a primary care mechanism and follow-up can be done through online exchange communities, with a moderator and other users and where questions and answers are posted on how to access digital services for businesses. Could these types of online communities be in demand and effective in generating knowledge about the use of digital tools to carry out personal or business tasks?

5.2.1 New questions about video tutorials and online training for digital financial tools

Influence of the starting point

Although in general it was shown that people reported feeling more knowledgeable about the digital financial tools presented, the question arises about how the initial knowledge point affects the participant in the effectiveness of the video tutorials? Understanding this in a better way would allow designing new differentiated training programs for specific target audiences based on their initial level of knowledge in general, and specifically for training programs on digital tools, which allows retaining their interest, encouraging participation and generating knowledge. with the best use of time.

Multiple exposures to video tutorials

Having confirmed the effectiveness of tutorials in generating knowledge, but not trust in digital financial services and the effectiveness of combining them with interaction with facilities, the following questions arose.

As long as the exposure to the video tutorial was made during a Zoom session and exclusively through a single playback, is it then possible that multiple exposures to this type of video tutorial do end up generating trust in digital financial services? If this proves true in future experiments, evidence would be obtained to design training programs that transmit the necessary elements to promote financial inclusion through digital tools.

Ideally, to test the newly proposed, a randomized design should be considered, with sample sizes large enough to identify causal effects not only against the control condition, but also to detect differences between groups with different numbers of exposures to these tutorials.

Facilitators presented in video tutorials

The video tutorials were designed by the CONEXION Development Association of El Salvador with the purpose of being short, friendly and empathetic to reach a general public within the “Connect with your business” training program.

These tutorials typically featured animation of two illustrated people having an everyday conversation about everyday aspects of entrepreneurship and small business. One of the questions that arises for future experiments is how do the models used in the tutorial videos influence the generation of trust in digital financial tools? Is it possible that the results show significant changes in the generation of trust in those video tutorials that represent real people instead of animations? Is it possible that the change occurs by employing people with recognized authority on the subject, as opposed to less well-known models?

6. Methodological annex

6.1. Experiment on the effectiveness of digital baskets and helpers

The proposed quasi-experimental method is called Difference-in-Differences, as it is a double subtraction of intra-group (before and after) and between-group (treatment and control) effects. The box T1-T0- (C1-C0), which appears in Table A1, shows the double difference that exists between treatment (T) and control (C), before (0) and after (1) the intervention.

Table A1. Scheme of operation of the Difference-in-Differences (DiD) method

	Before (baseline)	After (Monitoring)	Difference
Treatment	T0	T1	T1-T0
Control	C0	C1	C1-C0
Difference	T0-C0	T1-C1	T1-T0 - (C1- C0)

Fuente: Own elaboration.

The same can be estimated, and simultaneously test hypotheses more comfortably through a linear probability model adjusted by Ordinary Least Squares (OLS), on the equation described below.

Specifically, the inference will be made with robust standard errors by clusters to control for the lack of independence between responses within the tourist centers.

$$\pi_{it} = \alpha + \beta D_{it} + \gamma Post_t + \delta D_{it} Post_t + \eta_{it}$$

Where:

π_{it} is the result variable, which measures the scales of attitudes, knowledge and trust in digital technologies.

α is an intercept included to improve the goodness of fit of the model.

$Post_t$ is a dichotomous variable that defines before (0) and after (1) the Digi-Chiquihuites intervention.

β is the estimate of the difference between treatment and control, without considering the time before or after the intervention. In addition, γ is the estimate of the difference between the pre and post measurement, without considering the belonging group (treatment or control).

D_{it} is a dichotomous variable, which defines whether the individual belongs to the control group (0), or to the treatment group (1).

δ is the estimate of the mean treatment effect, and it quantifies how much the treatment group changed (what happened), relative to how much the control group changed (what would have happened in the absence of treatment). This is the interest estimate.

η_{it} is the error term for individuals.

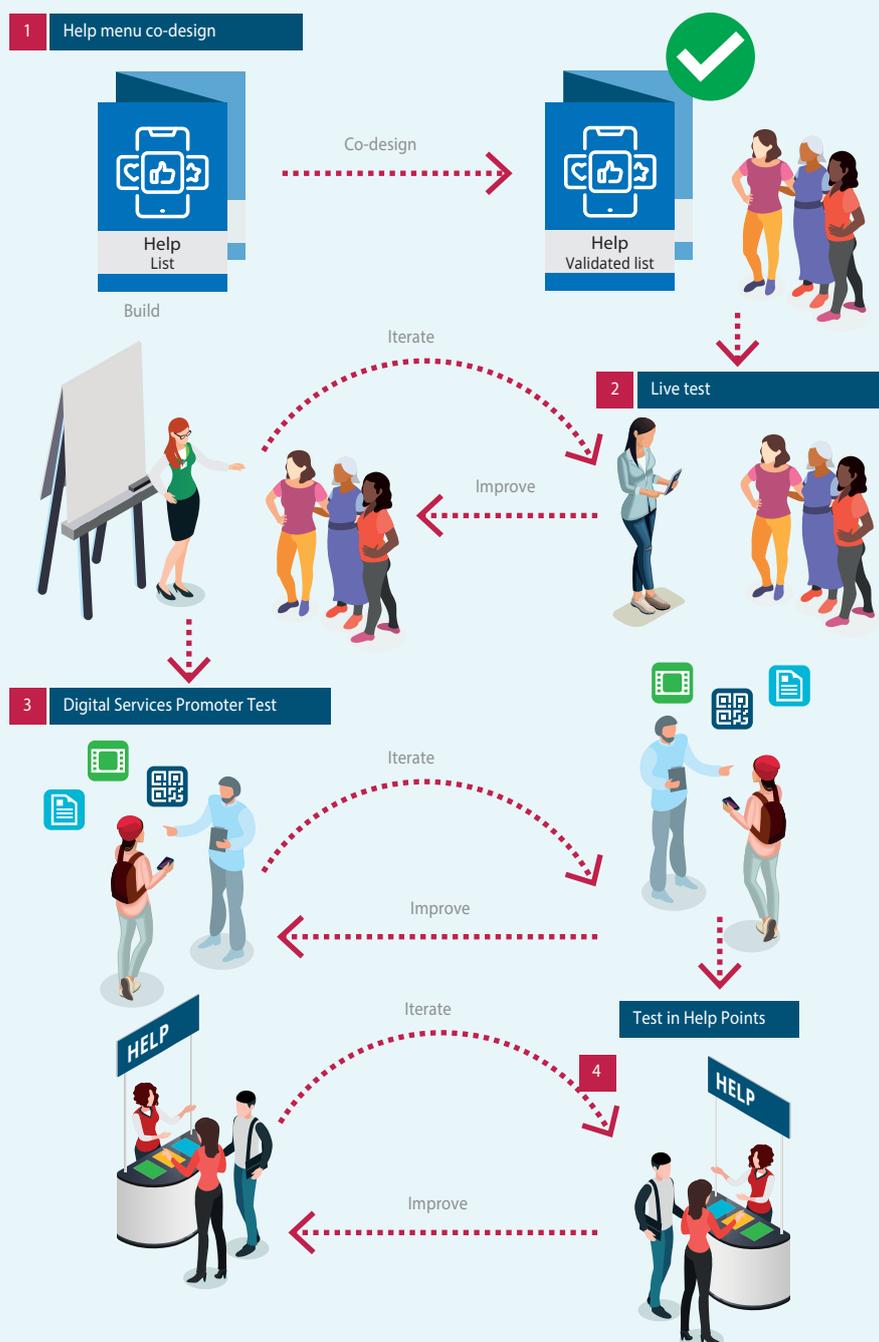
6.2. Experiment on promoters and digital service kiosks

The experiment designed and tested the effectiveness of the digital assistants-hip prototypes, through the following steps:

1. Co-design of the digital aid menu with selected users in tourist centers.
2. Test of assistantships live and with selected users in tourist centers.
3. Test of the model of promoters of digital services to: a) generate positive attitudes towards digital technologies, b) digital skills, c) security and trust.
4. Test of the prototype of help points to: (a) generate positive attitudes towards digital technologies, (b) digital skills, (c) security and trust.

Next, and for illustrative purposes, an iterative test scheme is presented for the 4 sequential points just described. It is common to find iterative tests for the development of products and services in agile methodologies such as Lean Startup or Lean Impact (see Chang, 2019).

Figure 7. Diagram for the development of models of promoters of digital services and help points



Source: Own elaboration.

Nota: Solo para fines ilustrativos.

At each point it was necessary to document the results, improvements and learning through a survey and a log. Likewise, it is proposed that both models: that of digital promoters and help points (kiosks or booths), evaluate the same aspects.

Data collection was carried out *in situ*, so once the assistance provided was over, the person was asked to answer 3 items, formulated on a Likert scale¹⁴.

Item I1A: Before receiving this aid, how beneficial did you think digital technologies, such as the internet and smartphones, could be in your daily life?

Where 1 is “Digital technologies are not at all beneficial” and 10 is “Digital technologies are very beneficial”.

1	2	3	4	5	6	7	8	9	10
<i>Not beneficial</i>					<i>Very beneficial</i>				

Item I1B: After receiving this help, how beneficial do you think digital technologies, such as the internet and smartphones, could be in your daily life?

1	2	3	4	5	6	7	8	9	10
<i>Not beneficial</i>					<i>Very beneficial</i>				

An aggregate indicator of the average increase in positive attitudes can be obtained from the responses, as follows:

$$POS = \sum_{i=1}^N (I1B_i - I1A_i) / n$$

If $POS < 0$ effectiveness of the prototype in generating positive attitudes towards digital technologies is not rejected.

¹⁴ It is important to emphasize to the promoter and “expert” that the performance of their work is not what is being measured with these points. Likewise, Likert scales can use colors and figures that help the interviewee to choose more easily.

Item I2: Speaking of the digital help you just received, how confident are you that you can do this procedure again on your own?

Where 1 is “Yes I can do it again on my own” and 3 is “Yes I can do it again on my own”.

1	2	3
----------	----------	----------

Yes, I can do it again on my own

I cannot do it again on my own

With the answered scales, a global indicator of participants can be obtained, to measure the average self-reported gain in digital skills:

$$HAB = \sum_{i=1}^N (I2_i[1y2] - I2_i[3])$$

Items were measured using a tablet. This automatically provided additional data on geospatial location, date and time of filling, which would be used for registration.

After assistance and measurement of quantitative items of digital promoters and help points. Hypothesis 5 on security and trust was assessed qualitatively, as it was considered sensitive.

6.3. Experiment on digital financial services

Due to imperfect compliance with the protocol, the effect called Intention-to-treat (ITT) had to be estimated and as a derivative it was possible to estimate a local measure of treatment known as Local Average Treatment Effect (LATE), by Two Stage Least Squares (2SLS):

$$y_i = \alpha_0 + \zeta D_i + v_i$$

$$D_i = \alpha_1 + \eta Z_i + w_i$$

Where:

y_i is the results variable, which measures the score obtained on the scales on trust and knowledge, by individuals.

D_i is a dichotomous variable, which defines whether the individual received the treatment (1), or not (0), regardless of the group to which he was assigned.

Z_i is an instrumental dichotomous variable, which defines whether the individual was randomly assigned to the treatment group (1), or to the control group (0).

ζ is the estimate of the average Local Average Treatment Effect (LATE) -in a generic way-, also called Average Effect of Treatment on Treated (ATT) or in this case, The Complier Average Causal Effect (CACE).

v_i is the error term by individuals in stage 1 of the estimation and w_i is the error term by individuals in stage 2.

α_0 and α_1 are intercepts used to improve the goodness of fit in both stages.

Box A. Some methodological learnings from the experiment

Additionally, among the methodological learnings to carry out randomized experiments such as the one carried out here, the following methodological recommendations arise. First of all, it is recommended to perform the Power analysis and in practice to ensure that the largest possible effective sample sizes are given according to the design, so that smaller minimum detectable effects are available in the analysis and avoid the occurrence of false negatives.

Lack of 100% attendance generates imperfect compliance, which changes the scenario of treatment effects that can be estimated in randomized trials, so using incentives to improve attendance rates (such as Behavioral Science applications) could be useful to encourage the participation of target groups, and help participants achieve their goals.

To replicate experiments like this, it is recommended that at least one practice session is scheduled to rehearse the experiment, where each member develops their script. This will allow the team to detect obstacles before reaching the field with the beneficiaries.

Likewise, although controlled trials (RCTs) require control groups, it is suggested that the treatment be administered to this group once the experimentation window is closed, so that potential benefits are not denied to anyone.

In addition, it is recommended to discuss with implementing partners the following aspects: When fully ethical, avoid mentioning participants that they are in an experiment, as this has been widely documented to affect the behavior of subjects (Hawthorne Effect).

Finally, it is recommended to socialize and discuss the design of the experiment with all the people involved in its execution. Especially with those who are in frequent contact with participants in the field. It is relevant to discuss whether the design consists of an individual trial or clusters and its implications, to ensure that all parties are on the same page.

Glossary

Co-design: Process of designing a product or service that includes the users from the beginning of the process, taking their inputs equally.

Counterfactual: Potential result that is not observed but that is estimated as a measure of the result that the treated units would have obtained if they had not received the treatment. Likewise, it applies to the unobserved result that the untreated units would have obtained if they had received the treatment.

Unilateral imperfect compliance: When in randomized experiments some units assigned to the treatment group decide not to receive it and remain untreated.

Bilateral imperfect compliance: When in randomized experiments some units designated to the treatment group decide not to receive it and remain untreated. Simultaneously, it happens that some units assigned to the control group find a way to receive the treatment.

Behavioral sciences: refers to the evidence-based study of how people behave, make decisions, and respond to programs, policies, and incentives. Rigorous methods are applied for their study to better understand which interventions work and, in particular, the degree of impact they have.

Inclusive digitization: Inclusion of digital technologies with equality and equity for all people, including the most vulnerable. It considers not only physical accessibility, but also the development of personal skills and the exercise of rights in pursuit of a digital citizenship in which no one is left behind.

Complier Average Causal Effect (CACE): LATE effect that only applies to those subjects who participated in the treatment. This inference cannot be generalized to the group of subjects who did not comply with the treatment, since they are considered to be systematically different from those who did participate. Also called Effect of Treatment on Treaties (ATT).

Hawthorne Effect: Alteration of the typical behavior that subjects can show when aware that they are studied as part of an experiment.

Local Average Treatment Effect (LATE): Generic name given to a treatment effect that is only generalizable to a subgroup of the study population.

Randomized experiments: Experimental designs in which the decision to assign the subjects to receive the treatment has been made based on random assignment, which allows selection bias to be eliminated and the effect of the interventions to be estimated free of factors. of confusion. Among the most common randomized designs are A/B tests, A/B/n tests, and RCTs.

Control group: Refers to the group of subjects used as a comparison group in certain experimental designs, and who at least temporarily do not receive the treatment. This allows us to construct a control condition or counterfactual result.

Digital tools: Refers to applications, programs, websites or online resources that can be accessed through smartphones, tablets or computers for the general performance of tasks.

R&D: Refers to research and development, which includes activities carried out to innovate and introduce new products or services. It is often the first stage in the development process.

Collective Intelligence: In its simplest form, “collective intelligence” can be understood as the enhanced ability that is created when people work together, often with the help of technology, to mobilize a broader range of information, ideas, and points. of sight. Collective intelligence emerges when these inputs are combined to become more than the sum of their parts.

Intention-to-treat (ITT): Effect of offering a treatment to a population. It is relevant when there imperfect compliance of the subjects studied in the assignment of receiving the treatment and not receiving it. If all subjects in the target population accept the treatment, then ITT is identical to the Average Treatment Effect.

Prototype: Model with the minimum functional characteristics used to test how a product or service works.

Self-selection bias: Bias that is induced in the result when the studied units designate themselves to receive or not receive a treatment.

Selection Bias: Bias that is induced in the result when the units studied in an experiment have been chosen by a systemic selection process, mostly when not been randomly allocated to the control group or treatment group. That is, when an explicit or implicit mechanism mediates the assignment of units, which conditions the results of the experiment.

Video tutorial: Multimedia method of knowledge transfer as a short-term instructional system based on self-learning.

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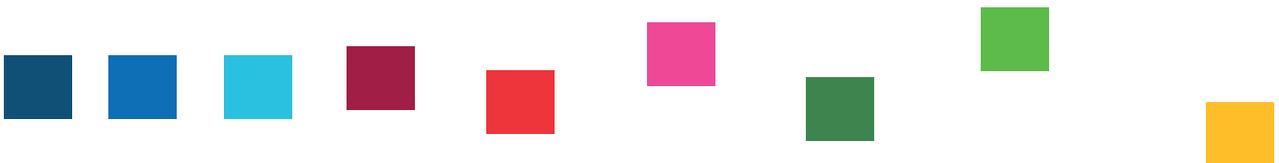


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