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Paul Rodríguez-Lesmes

Luis H. Gutiérrez

Juan Carlos Urueña-Mejía

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Paul Rodríguez-Lesmes[†] Luis H. Gutierrez[‡]

Juan Carlos Urueña-Mejía[§] Andrés Ortiz[¶] Ivan Medina Rojas^{||}

Mauricio Romero^{**}

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[†]**Corresponding author** School of Economics, Universidad del Rosario. E-mail: paul.rodriguez@urosario.edu.co

[‡]School of Economics, Universidad del Rosario.

[§]School of Economics, Universidad del Rosario, and Corporacion Universitaria Minuto de Dios

[¶]Corporacion Universitaria Minuto de Dios, and Universidad de La Salle

^{||} Corporacion Universitaria Minuto de Dios

^{**}Fundacion Capital

Abstract

The challenge for policymakers is providing good quality business training services that can reach vast numbers of firms while not expensive. This paper examines the marginal impact of implementing a free smartphone-based business training called *Expertienda* for Colombian microentrepreneurs. Using teams of local university students and a randomised control trial design, we invited microentrepreneurs to install the application in 2021 and follow up with them at least three times. The sample consisted of 1,013 microentrepreneurs in 10 Colombian cities, for whom we collected administrative records on the application usage and observational and survey data one year after the implementation. We show that for every 100 incentivized businesses, 4 installed and used the app. Moreover, there is no evidence of spillovers at the local level regarding take-up. Regarding business performance, results show no evidence that the course affected financial inclusion, formalisation, or business practices indexes.

Keywords: Financial inclusion, business practices, Formality, Digital training, Microbusiness

JEL Classification: C93 D22 O10 O17

1 Introduction

Microfirms are ubiquitous business units in developing economies. As such, they have been the focus of policy-makers, international financial organisations like the World Bank, the IADB, ONGs, and academics (Woodruff, 2018). Most of them are wholly informal, i.e., do not comply with either business or labour regulations, while others only comply with basic business formality requirements for their operation (i.e., tax and business registry), the so-called intensive margin (Ulyssea, 2018); but fail to follow labour regulations. This is a self-selection strategy since it allows them to compete, given their avoidance of labour costs. This strategy is accompanied by a low quality of jobs offered in the informal sector. Empirical evidence has shown that firms that choose to become formal, i.e., paying all labour costs, can improve the quality of job positions (Gutierrez and Rodriguez-Lesmes, 2023; Johannes et al., 2009; Rand and Torm, 2012). That same research has shown that there exists a productivity premium of being formal.

Governments have addressed the informality issue with different approaches. One of them has been through the enforcement of regulations or making labour regulations more flexible. These options have been difficult to implement due to a lack of institutional capacity and political restrictions (De Andrade et al., 2013; Rocha et al., 2018). In addition, many informal positions are only viable when the firm is informal, as formalisation *per se* does not seem to generate a premium on productivity (De Mel et al., 2008; Benhassine et al., 2018). A second approach has been providing tools to the micro-entrepreneurs through training courses (Woodruff, 2018).

This second approach has been researched extensively in the last 20 years (McKenzie and Woodruff, 2014; Bruhn et al., 2018; Woodruff, 2018; McKenzie, 2021). The most common types of them have been standard training programs like the ones offered by the

ILO programs on Start and Improve your Business. A second type of training course adds some mentorship from experienced entrepreneurs from one's community or includes peer interactions and mentoring (Fafchamps and Quinn, 2017; Brooks et al., 2018), or personalized business consulting (Bruhn et al., 2018; Dalton et al., 2021; Anderson and McKenzie, 2022). Recently, and potentially a response to standard training courses' null or low impact, a third branch of training courses offered to microentrepreneurs is personal initiative' psychological training approaches (Campos et al., 2017; Eller et al., 2022).

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Regardless of the effectiveness degree of traditional or new training courses, high costs have remained the main obstacle to scale-up the courses. One way to reach a more significant number of micro-entrepreneurs is by exploiting telecommunication technologies like, for instance, "SMS messages or apps on mobile phones to provide basic business tips and some customized advice to small business owners" (McKenzie, 2021, p. 296). We follow this direction by implementing an intervention using (very) short training lessons delivered through a smartphone application free of charge to the final users (*Expertienda*). The primary purpose of the treatment was to boost owners and managers of the microestablishments to install, examine, and complete the application lessons.

The objectives of this research are threesome. The first and leading one is to test to what extent the take-up of taking the virtual training course can be incentivized with the engagement of local promoters. The promoters were local undergraduate or recent graduate students from a nearby university. Second, to determine if the application's take-up could benefit by exploiting spillover effects. Third, we test whether the use of the

¹Early assessments of the effectiveness of traditional training courses were unfavourable (McKenzie and Woodruff, 2014; Woodruff, 2018). More recently, McKenzie (2021) and McKenzie et al. (2021) present a more positive nuance view of their effectiveness.

mobile application had effects on some microestablishments' measures of outcomes.

The implementation had the following procedure. First, we collected a baseline study in low and middle-income neighbourhoods of ten cities in Colombia to characterize the microestablishments. Second, with this information, we designed the mobile application training course to train firm owners in the topics of (i) business management, (ii) sales and marketing, (iii) customer service, and (iv) financial inclusion. Third, we implemented a randomised control trial (RCT) where we randomly promoted the application to a subset of businesses that survived the economic crisis generated by COVID-19. The promotion effort was done in person and at the premises of the businesses. The RCT (N=1,013) was designed to measure the extent of spillovers and the course take-up's reinforcement effects based on the units' geographical proximity. Finally, a follow-up census and survey (FU) study was collected one year after the intervention. The information matched the administrative records of the *Experienda* backend, which records the application's usage statistics.

Our research contributes to the entrepreneurship literature in three aspects. First, we investigated whether low-cost training courses can be effectively implemented through a mobile application used on smartphones or tablets. A related treatment intended to provide financial education to low-income and low-educational people was implemented in Colombia using an application called LISTA ([Moreno Sánchez et al., 2018](#)). The same apps were also used in another large-scale project in Colombia. This RCT was aimed at poor households in rural areas ([Attanasio et al., 2019](#)). Contrary to those two RCTs, on average, the microentrepreneurs in this study are of higher income and education level than the average treatment unit in those two studies and the average Colombian household head. Our research is also different from [Estefan et al. \(2023\)](#), whose intervention is directed to

microentrepreneurs contractually linked to a franchise where standardisation and training rules can be imposed. To the best of our knowledge, this is one of the first research of conducting an RCT with an application targeting established microentrepreneurs without a direct link with the implementing party apart from geographical proximity.

A second important contribution of this study is the inclusion in the design of the experiment of mechanisms to detect the presence of geographical spillovers on the dissemination of these treatments. We allocate the treatment with varying intensity (proportion of businesses treated in a small area) to measure if (i) control businesses get access to *Experienda* (openly available in the Android App Store), (ii) if effects driven by the training have effects on control units. De Andrade et al. (2013) have shown no evidence of spillovers in the case of inspector visits to businesses and fines linked to non-compliance with formality requirements. We hypothesized that spillovers might be more likely in 'positive' treatments. As a by-product, we contribute to the literature by being able to measure the extent of the links between businesses by eliciting social networks between these firms.

As a last contribution, this RCT makes part of the growing literature ([McKenzie and Woodruff, 2017](#)) on the effectiveness of training courses to enhance microestablishments adoption of more business practices and their business outcomes. It has repeatedly argued that firms operating formally may grow more through an expanded customer base and gain greater access to financial services and business loans ([Campos et al., 2023](#)). Adopting more (and better) business practices can address microestablishments' lack of information about the benefits of being formal and the variety of financial products they can get.

The remainder of the paper is organized as follows. Section 2 introduces the theo-

retical framework and the characteristics of the training program. Section 3 outlines the experimental design and empirical strategy. Section 4 presents the main results, and section 5 concludes.

2 Context

2.1 *Expertienda*

Microfirm owners typically report having no interest or time for training programs, low motivation to pursue them, and a very low willingness to pay for them (Woodruff, 2018). For this reason, the proper design of learning-centric courses is highly relevant for targeting these audiences. This involves the usage of strategies such as (i) including customized and adaptive content, (ii) delivering content in simple messages of short duration tailored to the base knowledge of the user, and (iii) using gamification to keep users engaged.² The development of *Expertienda* was led by Fundación Capital, which was the firm behind LISTA.³ The application was registered for free and public access in the Google Play Store.

The course was expected to be completed in approximately one and a half hours if starting from zero (with the application defining that the user must complete all levels), based on sets of 5-minute sessions involving texts and videos. The course covered the following topics: customer loyalty, business management, finance, marketing, and sales. The application also included a calculator for computing wages and required payments

²Gamification is the attempt to boost systems, services, organisations, and activities by getting similar experiences to those experienced when playing games to motivate and engage. Apart from school-level applications, it has effectively boosted entrepreneurship among high school students (Lafortune et al., 2022). There are no studies in the context of firm owners.

³For more information on Fundación Capital and its programs, see <https://fundacioncapital.org/>.

by law and a directory with the contact number of usual providers of goods typically sold in the stores. Further details are available in Appendix A.

2.2 Intervention

2.2.1 Target population

We evaluate ten neighbourhoods close to the Minuto de Dios University (Uniminuto) campus, a decentralized private university that aims to serve low- and middle-income students.⁴ The goal was to take advantage of the presence of students and professors who knew the neighbourhoods. In this way, we expected that entrepreneurs would be more willing to participate in the study as it was connected to an institution they knew.⁵ Given the maps of each city selected for the study, we drew polygons that we estimated could contain at least 300 microestablishments per neighbourhood using Google Maps. Then, the BL survey company made a census of all businesses within each of the polygons (3,194 detected businesses), and for a sample of them, a full survey was collected (N= 1,654).

The survey includes a mixture of traditional commercial zones and residential areas with low and medium socioeconomic households, where most businesses are mom-and-pop shops, businesses with only one or two workers (including the owner), typical in most Latin American countries (Ramos-Menchelli and Sverdlin-Lisker, 2023). The study captures various aspects of the businesses surveyed, including basic characteristics of the

⁴Cities are: Barranquilla, Bello, Bogota, Bucaramanga, Girardot, Ibague, Neiva, Pereira, Soacha and Zipaquirá. The smallest of them has more than 100,000 inhabitants, but four are located in the three largest metropolitan areas of the country.

⁵The central concern was trust. We expected that business owners would be reluctant to provide detailed financial information about their businesses to a general survey firm or install an application on their mobile phones, fearing a scam or potential extortion by criminal gangs. Only in one block, the survey firm reported that a couple of shop owners did not want to participate explicitly because of the involvement of the University, as they feared the University was trying to get the information to buy their properties to expand its campus.

enterprise, its degree of formality, relationship with the financial system, employment practices, training, use of information and communications technology, and other characteristics. Table D1 presents some central characteristics of the businesses and owners: 60% of the owners are female, 34% have a tertiary education degree (either professional or vocational), but only 6% had prior experience as entrepreneurs; the businesses are typically convenience stores (31%), small restaurants (31%), and business related with beauty and health (15%); 37% are located in commercial streets with premises of nearly 5 meters on the street and 20 square meters of area. Of them, almost all used smartphones but, at baseline -pre-COVID-, only 50% used the internet as a tool in their business.⁶ For the RCT, we filtered out places requiring very specific rules of operation or with activities where the *Expertienda* contents might be less relevant.⁷ A total of N=1,013 businesses were chosen for the intervention.

2.2.2 Intervention

In each city, one Uniminuto undergraduate student or recent graduate with experience in field data collection was hired to visit the premises of microestablishments selected for the treatment. If the place was closed after several visits, or there was evidence that it was permanently closed, a replacement unit was chosen based on proximity to the original business. This facilitator would explain the logic of *Expertienda* to each owner or manager, capture some basic data about the place if it was a replacement unit, and encourage them to install the application. They would even help them to find and download the

⁶Gutiérrez et al. (2020); Rodríguez Lesmes et al. (2020) and Gutiérrez et al. (2023) presents further details about the surveys. Urueña-Mejía et al. (2023) shows that the microentrepreneurs' characteristics are similar to those found in representative studies in the country.

⁷Community pharmacies, franchises, travel agencies, shops that sell white goods (i.e., fridges, washing machines, etc.), and nightclubs.

application and register on it if requested. After ten days, the facilitator would do a first telephonic follow-up to check if the respondent could install and use the application or provide any further guidance. Finally, up to four months later, a group of Uniminuto students would call the owner again to check again about the progress.

2.2.3 Timeline

The baseline data was collected in November 2019, as described in the pre-register. However, the intervention was adapted to the changing conditions resulting from the COVID-19 lockdowns (Carranza et al., 2022).⁸ The following step, the intervention, was initially planned for the second term of 2020 but occurred between April and July 2021 due to the COVID-19 pandemic. We conducted a telephonic follow-up to determine which businesses were still operating to carry on the randomisation of the intervention. The course and application development occurred between January and July 2020. Finally, the end-line survey was completed between April and May 2022 (about one year after the intervention).

2.3 Theoretical framework

Our research contributes to the literature that explores how training could improve microestablishments productivity by enhancing business practices. Business training courses should promote more adoption of business practices, higher levels of formalisation, and more financial inclusion. In appendix C we describe the concepts and the underlying literature in detail. We formulate the following hypotheses:

*Hypothesis 1: the intervention using local promoters increases *Exptienda* usage.*

⁸Appendix B describes in detail the adjustments.

Hypothesis 2: Take-up of the course increases with the geographic density of the treatment.

Hypothesis 3: *Expertienda's* users improve their business performance indicators.

We produce a Total Score, which averages the three indexes described above. As described below, the power of the study is based on this variable. We consider other outcome variables for the analysis, such as the computed profits and observed number of clients and workers. We expected those outcomes to be less likely affected by the intervention as it might take firms more than one year to attain such results.

3 Experimental Design

We designed the RCT to estimate the causal effect of (i) the promotion effort on the take-up of the course (including both direct and indirect effects) and (ii) the impact of the course on the outcomes of interest. Below, we present the randomisation procedure and the empirical strategy.

3.1 randomisation

In Latin America, cities are large and densely populated. For this reason, walking is still one of the most prevalent transportation modes for daily life activities, showing the high importance of neighbourhoods in the daily life of citizens ([Loukaitou-Sideris, 2020](#)). Hence, it is possible that an intervention that affects a microestablishment could be easily communicated to their peers who were not subject to the intervention (spillover effects), especially if it is an application of free access that can be downloaded into almost any

mobile phone.⁹ This feature would drastically simplify the promotion efforts of a Government, a guild, or another type of organisation willing to promote similar initiatives.

The diagram in Panel A of Figure 1 summarizes the procedure to allocate the treatment among the defined set of units. In step 1, the ten neighbourhoods were split into clusters of shops (146 clusters) based on geographical proximity, each of them of around 50 meters, with around 8 microestablishments on average per cluster.¹⁰ In the Figure, microestablishments A and B are allocated to cluster 1, C and D to cluster 2, and E and F to cluster 3. The number of clusters (and their size) was based on power calculations of a multilevel design. The minimum detectable difference on the Total Score, with a 0.80 power at the 95% confidence level, with three arms of 49 clusters of 8 shops each, was of 0.05 - 0.31 standard deviations -. Such calculations were based on a mean of 0.42, a standard deviation of 0.16, and with intra-cluster correlation of 0.19, the values observed at the baseline. In the discussion section, we present details on how the power is affected by attrition.¹¹

In the second step, the treatment allocation at the individual level was designed to ensure that we could have treated [control] units with several treated neighbours and treated [control] units with few control neighbours. This way, it is possible to disentangle direct and indirect effects based on location. The design is similar to [Sinclair et al. \(2012\)](#).¹²

⁹Spillovers arise whenever one unit is affected by the treatment status of another unit. This could be because of the 'contamination' of the control group (i.e., control units receive the treatment) or because equilibrium effects occur (ex., the growing sales of the treated store affect the income of the control store due to demand displacement). The assumption that there are no spillovers is known as the non-interference assumption, part of the Stable Unit Treatment Value Assumption (or SUTVA) usually invoked in causal inference.

¹⁰We adapted the clustering script by [Wesley \(2013\)](#). The algorithm is based on the coordinates of each shop and the number of desired shops per cluster.

¹¹The calculation was done with the command *clustersampi* in Stata 17 ([Hemming and Marsh, 2013](#)).

¹²The levels in their experiment are the neighbourhood, the household, and the individual. The authors' non-interference assumption is that the treatment assignments of units in other neighbourhoods do not matter. What determines which potential outcome is revealed is a combination of three things: 1) An

We assume that spillover effects if exist, would be small and restricted to just one of a few blocks. This is based on the following observation: 64% of the respondent said that they do not have regular contact with any other entrepreneur in the area, 22% with only one, 8% with two, and the remainder 6% with three or more.

In practice, the clusters were randomly assigned to three potential expositions to the treatment.¹³ In the first arm, no units were treated (*all control*, N=166 microestablishments / 22 clusters), in the second, only 50% were treated (*half-half*, N=567/83), and in the third all units were treated (*all treated*, N=280/41). Given this, the treatment at the individual level was randomly assigned for the second arm.¹⁴ In the example of our diagram, cluster 1 is a *all treated*, cluster 2 a *half-half*, and cluster 3 a *all control*. As a result, microestablishments A and B are selected for treatment, and among C and D, the last one is randomly selected to be treated as well. Microestablishments C, E, and F are control units and were not visited by the field team promoting *Expertienda*.

The third step corresponds to classifying each microestablishment according to the observed level of exposition. We construct a buffer of 50 meters around each unit and determine the proportion of units treated. If it is above 50%, we say that the unit is in a *high intensity* treatment region; otherwise, it is in a *low intensity* area. As a result, microestablishments end up classified into four groups:

- *Treated in high intensity (TH)*: Unit received treatment, and at least 50% of their neigh-

individual's treatment assignment, 2) The treatment assignment of his or her housemate, 3) The treatment assignment of others in the neighbourhood.

¹³The randomisation was based on the command *randomisation* in Stata 17, blocking by region of the country (South-Centre, North-West) and on the size shop. It runs 1,000 versions, from which it chooses the one with the best balance across covariates (the average per cluster of the three indicators, size of the shop (perceived area), education level of the owner, type of businesses (convenience stores, food and bars, beauty salons, and alike services, and others), commercial density of the street).

¹⁴The same *randomisation* script was following, with 200 repetitions, similar blocks, and the same covariates but defined at shop-level.

bours received treatment. In the example, microestablishments A and B.

- *Treated in low intensity (TL)*: Unit received treatment, and less than 50% of their neighbours received treatment. In the example, microestablishment D.
- *Control in high intensity (CH)*: Unit did not received treatment, but at least 50% of their neighbours received treatment. In the example, microestablishment C.
- *Control in low intensity (CL)*: Unit did not receive treatment, and less than 50% of their neighbours received treatment (pure control group). In the example, microestablishments E and F.

If the effect for groups TH and TL is the same, there is no reinforcement between treated units. And if there is no effect for group CH, there is no contamination of the controls. If both conditions hold, we would conclude that there are no spillovers. In such a case, a simple treated vs. control exercise can be performed. Panel B of Figure 1 shows an example of two cities, where the stars correspond to treated units, and the colours identify clusters.

3.2 Empirical Specification

We estimate the impact of incentivizing entrepreneurs to install *Experienda* by estimating the following equations (1 and 2).

$$Y_{ij} = \beta_1 Treated_{ij} + \beta_2 Y_{ij}^{(BL)} + \mathbf{X}_{ij} \gamma_1 + \epsilon_{1i} \quad (1)$$

$$Y_{ij} = \beta_3 TH_{ij} + \beta_4 TL_{ij} + \beta_5 CH_{ij} + \beta_6 Y_{ij}^{(BL)} + \mathbf{X}_{ij} \gamma_2 + \epsilon_{2i} \quad (2)$$

In both equations, Y_{ij} denotes the outcome of interest for microestablishment i located in block j . In equation 1, *Treated* indicates if the microestablishment was selected for treatment. Instead, equation 2 considers the intensity of treatment in the surrounding area as defined in section 3.1.¹⁵ In both equations, $Y_{ij}^{(BL)}$ corresponds to the measurement at the baseline of the outcome. The matrix X_{ij} represents a vector of control variables, including gender, education level, a dummy for internet usage for business, a dummy for having premises in a commercial district, and fixed effects of city and economic activity. Finally, ϵ_{ij} corresponds to the error term. In both cases, standard errors are clustered at the geographical cluster level.

Equation 1 tells us the individual treatment assignment. Instead, equation 2 allows us to compare if there is a differential effect depending on the treatment status of their neighbourhoods, as explained above.

When we analyze *Expertienda* outcomes such as being registered as a user in the application, or the actual usage in minutes, the estimates correspond to an average treatment effect on the treated (ATT). However, for final outcomes, the estimates correspond to an intention-to-treat (ITT), as most microentrepreneurs did not install the application. Hence, to estimate the impact of *Expertienda* on the main outcomes, we estimate the Average Treatment Effect (ATE) with an Instrumental Variable (IV) approach where the usage is instrumented with the treatment assignment.

¹⁵As explained before, the High/Low area is defined for each unit i , using a buffer of 50 meters. It might match with the geographical cluster j , but this is not always the case.

3.3 Qualitative analysis

The decision to take-up the course could be understood under the [Davis \(1989\)](#) theory of acceptance and use of technology (TAM model). Small business entrepreneurs resist adopting a technology if they are not certain it is beneficial, easy to operate, and affordable ([Suhartanto and Leo, 2018](#)). Moreover, characteristics of the microentrepreneurs such as education and cultural constraints might increase the resistance to accepting a new technology ([Anggadwita et al., 2015](#)).

To further explore such a possibility, the project included an ethnography study, corresponding to the study of social interactions, behaviours, and perceptions within groups, teams, organisations, and communities ([Brewer, 2000](#)). To understand application usage, we conducted in-depth interviews with some treated entrepreneurs, including those who accepted and did not. The sample included 40 Bogotá, Soacha, Zipaquira, Girardot and Ibagué microentrepreneurs. Appendix [H1](#) presents the guiding questions of the interviews.

4 Results

4.1 Baseline characteristics and balance

The randomisation was effective in attaining balance on a large sample of characteristics observed at the baseline. Panel A of Appendix Table [D1](#) presents differences at the baseline, considering the individual assignment into *Exptienda*, the assignment into the three arms of the randomisation, and the constructed groups of high/low exposure. For almost all variables, there are no significant differences. Panel A of Table [D2](#) does the same but

for the outcomes described in the conceptual framework. We do not observe substantial differences across groups. Still, in a few cases, treated businesses appear less likely to be related to food (small restaurants) and slightly more likely to be connected with health and beauty. The treatment units appear to rank higher on the perseverance scale. Also, the control units in high-intensity areas appear to have smaller premises. We will control for those characteristics in our main specifications.

4.2 Attrition

Attrition in microfirms' studies is usually large. First, survival rates of microfirms are relatively low (Cader and Leatherman, 2011). Second, even if firms do not disappear, they might relocate outside the study's boundaries. Third, firm owners might simply refuse to be re-interviewed. Given the result of a similar study in Brazil, we expected a re-interview rate of 50% to 60% (De Andrade et al., 2013). Yet, the emergence of COVID-19 certainly impacted this figure. While we started the intervention after most of the restrictions to mobility were in place, the study was done over the recovery of the economy, and the effects of the lockdowns might still disrupt several businesses. Figure 2 shows that from the original 1,013 businesses, only 555 were found by the enumerators at the FU when they were enlisting all businesses in the area - the microestablishment census-. This means that all other businesses moved outside the boundaries of the study or were permanently closed). From those 555, a total of 228 were successfully re-interviewed. Given this, there is a re-interview rate of 22.5%.

We explore if firms' survival and survey responses were related to the treatment. Columns 1 and 2 of Table 1 show that this is the case for treated units in high-intensity areas. This fact is a potential concern as more than implying that *Exptienda* induced mor-

tality of firms (or a substantial change that made the enumerators unable to find them ¹⁶), it might signal some selection in the actual allocation of the treatment. We considered that this might be the result of a specific issue in the field: for two of the cities - Barranquilla and Bucaramanga -, the enumerators were unable to cover the entire area as the businesses were not willing to provide any information as they were concerned about the security of their neighbourhoods and did not trust the enumerator teams. When we repeated the exercise taking out these two cities, the coefficient of the difference was reduced by half and was no longer significant. We keep the main sample for the results below as we do not observe differences in the interview probability conditional on the business being found, nor are there differences in the baseline information between the alternative treatment groups in the resulting FU sample (see panel B of tables [D1](#) and [D2](#)). Still, in the appendix, we present results with the sample without these two cities with no substantial differences.

The result of the attrition is that the final survey sample is 228 units with 110 clusters. The intra-cluster correlation grows to 0.3402, and we observe around 37 clusters per arm with two units each. The result is that the minimum detectable difference grows to 0.09 - 0.56 standard deviations - (almost twice the original detectable difference).

4.3 Take-up of *Expertienda*

Table [2](#) shows that the intervention did increase the usage of *Expertienda* considering registered users in the application. Columns (1) to (4) are based on the sample of businesses used for the randomisation found at the moment of the intervention. Column 1 shows

¹⁶Firms do change their name and in some cases their main activity, which was a common response to the COVID-19 crisis.

an increase of 3.97 percentage points in the take-up. Given that the variable's mean is 3.3%, the intervention is responsible for almost all users from the sample in the application. If we consider usage for at least 5 minutes (at least one module of the course, in one session), results in Column 3, a more strict definition of usage, the increase is 2.3 percentage points. Columns 2 and 4 show no evidence of reinforcement effect due to spillovers: treated units in high- and low-intensity areas present coefficients that are not statistically different (though coefficients in TL are slightly smaller in magnitude). In addition, there is no evidence of 'contamination' of the controls and no evidence that the non-treated business take-up rate differs according to the treatment of their neighbours. Columns 5 and 6 consider a definition not based on the survey but instead of the administrative data: whether respondents recall hearing about *Exptienda*. Results are qualitatively similar.

On top of showing the intervention's effectiveness in increasing the course take-up, the table also presents the characteristics of entrepreneurs more likely to enrol in this type of program. First, there is no gender or age difference. In terms of education, individuals with tertiary education are surprisingly less likely to enrol. This socio-demographic pattern is likely to be the case due to the inclusion of internet usage for business, typically correlated with the socio-economic profile of the entrepreneur. This variable is a central predictor of the update. Other characteristics which could be correlated with general training take-up are not relevant, such as the outcome indexes measured at baseline (formality, financial inclusion, and management practices), personality traits (perseverance), whether the business is located in a commercial area (with represents the initial investment level), or the past experiences of the owner as an entrepreneur.

4.4 Impact on business performance

Table 3 shows the ITT on the performance of business outcomes. None of the treatments' coefficients are significant. For the sample without Barranquilla and Bucaramanga, there is a positive effect on the formality dimension, but it is significant only at the 90% level (Table E1 in the appendix).¹⁷ Appendix F presents results using instrumental variables, which delivered the effect for those who actually installed the application(ATT). Overall, the results suggest that the application did not affect the interest outcomes, or it did; the effect was too small to be detected.

4.5 Qualitative analysis

Some of the reasons reported by the entrepreneurs on why they decided to follow the program were:

- to learn more about technology, about the legal issues of the businesses, but also for curiosity as it was free,
- to help the students with the survey.

And some of the reasons why shopkeepers did not want to participate were:

- lack of time, mistrust of the manipulation of digital solutions (data privacy issue), and
- lack of knowledge of the purpose of the application (tangible or real benefit).

¹⁷Table E2 presents results on the specific variables constituting the indexes. There is a positive effect on reducing the intensive margin of informality (an increase of 15.8 percentage points on the probability of complying with labour regulations), increasing access to insurance products (13.6 percentage points), and on the usage of electronic wallets (12.8 percentage points). These effects have large confidence intervals but are significant at the 95% level.

These concerns are similar to those typically reported with any training. In contrast, we observed quantitatively that using the Internet as part of the business operation was the central predictor of take-up (aside from the intervention). This was the case for 50% of the businesses at BL, a number that grew to 57% at FU, but mostly due to the lessons coming from COVID restrictions. Hence, this limitation decreases over time but is likely to become a larger barrier for some entrepreneurs.

There were general perceptions in both directions on the general experience with *Expertienda*. It has positive attitudes such as:

- "is helpful, and I learned a lot from the tips for managing expenses. ",
- "*Expertienda* is an interactive application; it gives interesting and basic trade tips",
- "...it was very explanatory that application",
- "It was good to work on the platform."

However, some users have less favourable perceptions:

- "I did not use *Expertienda* because it tells you lies",
- "I downloaded it, I was managing it, and I put much care, then I did not give it so much importance and deleted it",
- "I almost do not like applications."

We conclude that *Expertienda* faced the traditional problems of most training courses in the literature, where individuals do not find a good reason for finishing the training. Figure A1 shows that most users completed just a few lessons (less than ten minutes), and few of them completed the entire course (those above 40 minutes). In this sense, it is far from attaining the gains from coach-based or role-based experiences.

5 Discussion

First, the results above showed that while the intervention managed to engage entrepreneurs to install the app (H1), there is no evidence of spillovers on the take-up (H2). Hence, despite the simple access to the application, it is required to invite each business owner to target them. Still, costs are notoriously low compared with other types of training. Our fixed development costs were around 252.89 USD per potential user, while variable costs were 4.85 USD per potential user, considering we aimed to treat 644 entrepreneurs (Table G1). In comparison, traditional training like [Campos et al. \(2017\)](#) intervention costs 756 USD per unit, and the virtual but comprehensive one of [Estefan et al. \(2023\)](#) costs 440 USD (further details in Appendix table G2). The big advantage is that the cost per person decreases rapidly: if we targeted the 3,194 microbusinesses in the selected neighbourhoods, the fixed costs would drop to 52 USD; getting closer to the 22 USD reported by [Attanasio et al. \(2019\)](#). Hence, a program in this line could be a substantially cheaper option for the 1,313,201 microbusinesses in Colombia that hold a business registry according to the 2021 official statistics ([DANE, 2021](#)).

Second, no evidence exists that the course modified the targeted outcomes (H3), even among those who installed the application. While the minimum detectable effect grew due to the large attrition rate that studies suffered, the results highlighted that this one would be small (less than half of one standard deviation of the total score) if there were any effect. There is weak evidence on specific outcomes such as the formalisation of the labour force and the take-up of insurance and electronic wallets. The limitation on the study power imposed by the high attrition rate makes it difficult to assert the validity of these results.

Third, the application development team also performed a qualitative exercise with

interviews of users and non-users. Their comments suggest that *Exptienda* faced the traditional problems of most training courses in the literature, where most individuals were not motivated enough to accept this technology (Suhartanto and Leo, 2018) to complete the training. For future research, a possibility could be to take advantage of the experience and goodwill of the Chambers of Commerce in Colombia. They might provide the local promoters with increase take-up and keep the microentrepreneurs engaged.

6 Conclusions

Several studies examine business training courses for microentrepreneurs. Many of them (Table G2) find no significant positive effects of training on business performance (Karlan and Valdivia, 2011; Drexler et al., 2014; Fiala, 2018). Others find that business training increases profits, survival, or growth in the long- (Blattman et al., 2016; McKenzie and Puerto, 2021) or short-term (Mano et al., 2012; De Mel et al., 2014; Field et al., 2016). Digital tools are promising alternatives to increase the reach of these programs substantially, as shown by Attanasio et al. (2019) and Estefan et al. (2023). However, there is still substantial work to do.

Our intervention was designed for an open group of entrepreneurs of all ages and literacy levels, which could have been established recently or operating for years. They do not belong to a particular social program nor are connected to the application designers or facilitators in another way other than geographical proximity. This scenario is closer to what a large-scale business training program would face.

Our results show that increasing take-up at a low cost is possible by using local facilitators. However, the central limitation is how to maintain them engaged in the program,

even after designing an application tailored to the needs of the target population. Keeping entrepreneurs engaged obtaining learning outcomes and internalising business practices without involving coaches' direct participation is still an open question.

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Figure 1: randomisation process

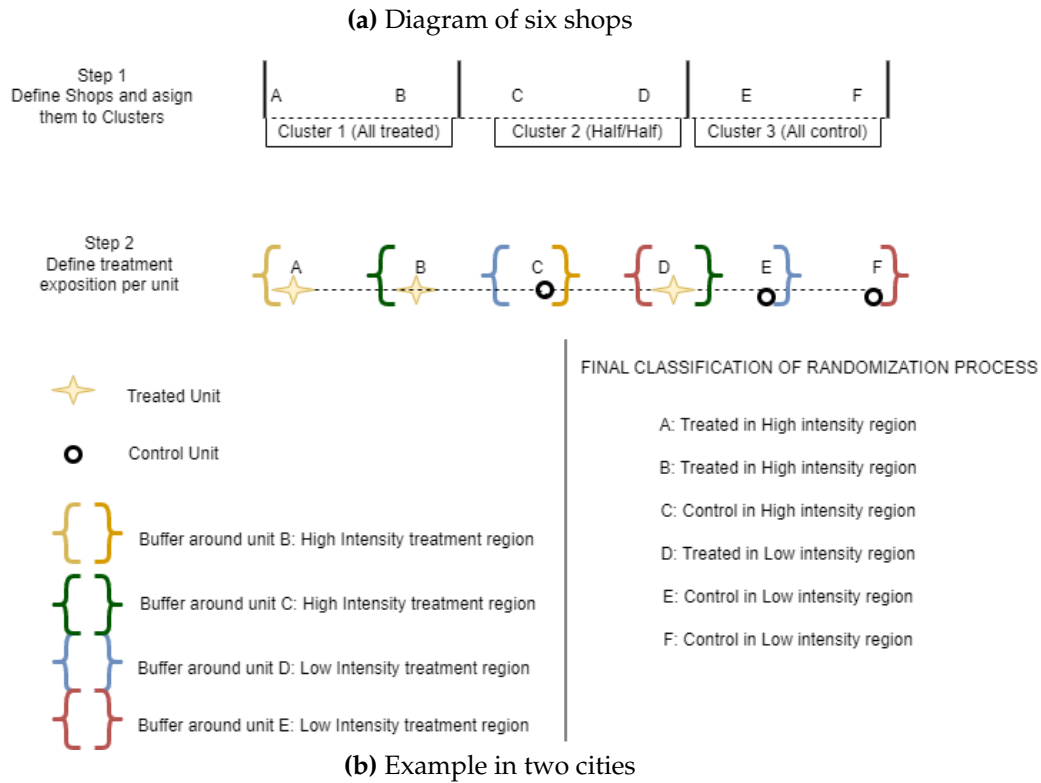


Figure 1 shows the randomisation diagram in its simplest form in panel A. In stage 1, it is defined how each of the stores is assigned to the clusters. In stage 2, depending on the cluster, the type of treatment is determined at the individual level as follows: The star represents the treated unit and the circle for the control unit. Subsequently, buffers are created around each of the units. The colours yellow, green, blue and red correspond to the reference buffer of each of the units. Finally, on the right side, the kind of randomisation classification each of the units ends up with is presented. Panel B presents the above idea at the level of two cities (Ibagué on the left side and Girardot on the right side). The stars show the treated units, in circles the control units, and the different colours show the belonging to a different cluster.

Figure 2: Sample size over the steps of the intervention

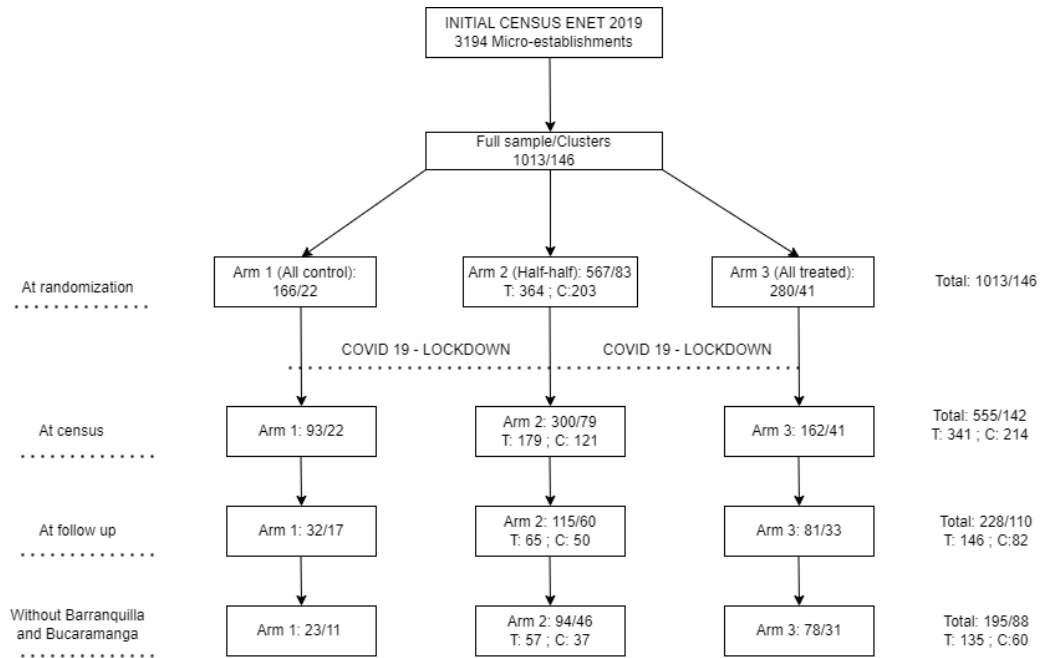


Figure 2 shows a diagram with the sample sizes in the different stages. First, we start with all the micro-establishments that were selected for interviews and for randomisation, where the number of places is shown and on the right the number of clusters. Then we move on to the different stages in each of the analysis arms.

Table 1: Differential attrition rate. FU contact and treatment status

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Not found at FU		Surveyed at FU		Without Not found at FU		Without Surveyed at FU	
Treated	0.101***		-0.0149		0.0511		0.00277	
	(0.0346)		(0.0467)		(0.0418)		(0.0544)	
TH: treated in high intensity		0.114**		0.0277		0.0231		0.0569
		(0.0441)		(0.0610)		(0.0560)		(0.0733)
TL: treated in low intensity		0.0278		-0.0547		-0.0144		0.0390
		(0.0637)		(0.0822)		(0.0730)		(0.0966)
CH: non-treated in high intensity		-0.0107		0.0545		-0.0746		0.101
		(0.0545)		(0.0701)		(0.0679)		(0.0872)
Observations	994	994	536	536	741	741	427	427
R2	0.0527	0.0546	0.0764	0.0790	0.0387	0.0408	0.0684	0.0714
Dependent var. mean	0.461	0.461	0.410	0.410	0.424	0.424	0.445	0.445

Note: Columns (1) to (2) are based on the sample of the randomization microestablishments of the BL which were found at the intervention. Columns (3) and (4) to the sample of the randomization microestablishments of the BL which were found at the FU. Robust standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

Table 2: Intervention impact on take-up

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Expertienda registered user		More than 5 minutes using the app		Heard of Expertienda		Expertienda registered user
Treated	0.0397*** (0.00892)		0.0233*** (0.00700)		0.107** (0.0491)		
TH: treated in high intensity		0.0381*** (0.0110)		0.0209** (0.00849)		0.114* (0.0689)	
TL: treated in low intensity		0.0252 (0.0176)		0.0185 (0.0154)		0.107 (0.0739)	
CH: non-treated in high intensity		-0.0114 (0.00727)		-0.00727 (0.00549)		0.00992 (0.0545)	
Heard of Expertienda							0.119 (0.0803)
Female Owner	-0.00224 (0.0119)	-0.00217 (0.0119)	-0.00958 (0.00925)	-0.00955 (0.00926)	0.0537 (0.0423)	0.0535 (0.0430)	-0.0246 (0.0358)
Owner has tertiary education	-0.00839 (0.0150)	-0.00822 (0.0150)	-0.0226** (0.0106)	-0.0226** (0.0106)	0.0397 (0.0548)	0.0400 (0.0555)	0.0440 (0.0502)
Age 31-42	-0.00896 (0.0134)	-0.00805 (0.0134)	0.00476 (0.00895)	0.00514 (0.00892)	0.0176 (0.0629)	0.0183 (0.0625)	-0.00831 (0.0511)
Age 43-58	0.0193 (0.0172)	0.0211 (0.0173)	0.0195 (0.0121)	0.0202* (0.0122)	0.0327 (0.0582)	0.0326 (0.0587)	0.0674 (0.0529)
Age more than 58	0.0139 (0.0257)	0.0150 (0.0259)	0.0112 (0.0167)	0.0118 (0.0169)	0.119 (0.0848)	0.119 (0.0851)	0.114 (0.0808)
Use internet for business	0.0270* (0.0143)	0.0273* (0.0144)	0.0341*** (0.0119)	0.0342*** (0.0119)	-0.0283 (0.0468)	-0.0285 (0.0472)	0.0813* (0.0483)
Perseverance	0.00651 (0.00492)	0.00621 (0.00484)	0.00446 (0.00298)	0.00437 (0.00297)	0.0344 (0.0233)	0.0345 (0.0237)	0.0440** (0.0203)
Located in a commercial zone	0.0139 (0.0156)	0.0145 (0.0157)	0.0159 (0.0124)	0.0162 (0.0125)	-0.0577 (0.0531)	-0.0573 (0.0537)	0.0308 (0.0436)
Formality index	-0.00379 (0.0188)	-0.00271 (0.0190)	0.00692 (0.0133)	0.00704 (0.0136)	-0.0481 (0.0874)	-0.0472 (0.0872)	-0.0132 (0.0570)
Management practices index	0.0280 (0.0211)	0.0276 (0.0213)	0.00775 (0.0168)	0.00768 (0.0169)	0.0112 (0.0828)	0.0103 (0.0833)	0.0681 (0.0648)
Financial inclusion index	-0.0151 (0.0331)	-0.0147 (0.0331)	-0.0373* (0.0209)	-0.0371* (0.0209)	0.192* (0.112)	0.192* (0.112)	0.0205 (0.111)
Owner has experience as entrepreneur	-0.0146 (0.0199)	-0.0146 (0.0199)	-0.00805 (0.0160)	-0.00799 (0.0160)	-0.0336 (0.0529)	-0.0341 (0.0536)	-0.0690 (0.0563)
Observations	978	978	978	978	226	226	226
R2	0.0571	0.0579	0.0486	0.0489	0.159	0.159	0.172
Dependent var. mean	0.0337	0.0337	0.0194	0.0194	0.102	0.102	0.0752
Dependent var. SD	0.181	0.181	0.138	0.138	0.303	0.303	0.264

Note: Columns 1, 3 and 5 presents the regression coefficient for the treatment variable as well as controls variables (measured at the baseline) such as gender, education, age, internet, perseverance index, localization, formalization, management practices, financial inclusion, experience as entrepreneur, and fixed effects of activity and city. Columns 2, 4 and 6 present the coefficients for the categorization of treated in the high-treatment area (TH), treated in the low-treatment area (TL), and non-treated in the high-treatment area (CH) (the base is non-treated in the low-treatment area (CL)), with the same control variables.

Table 3: ITT results of the Expertienda intervention

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) TT	(5) TN	(6) NT
Score Total	0.44	228	0.031	0.052	-0.022	0.008
		104	(0.028)	(0.040)	(0.040)	(0.044)
Score Dim 1. Formal sector	0.46	228	0.071	0.056	0.025	-0.041
		104	(0.044)	(0.055)	(0.058)	(0.063)
Score Dim 2. Business practices	0.56	228	-0.007	0.040	-0.061	0.044
		104	(0.050)	(0.068)	(0.076)	(0.067)
Score Dim 3. Financial inclusion	0.33	228	0.030	0.061	-0.029	0.020
		104	(0.030)	(0.047)	(0.054)	(0.056)
How many clients (observed)	5.04	228	-0.270	-1.518	-1.960	-2.543**
		104	(0.924)	(1.398)	(1.316)	(1.217)
Computed profits (10 USD)	60.47	228	-38.781	59.302	-14.090	153.100
		104	(82.942)	(48.442)	(45.332)	(147.663)
Use internet for business	0.57	228	0.084	0.144	-0.022	0.042
		104	(0.073)	(0.116)	(0.138)	(0.123)
Some investment 2 years	0.68	228	-0.057	-0.072	-0.352***	-0.149
		104	(0.081)	(0.094)	(0.114)	(0.103)
How many employees (observed)	1.79	482	-0.107	-0.143	-0.137	-0.073
		137	(0.107)	(0.127)	(0.216)	(0.184)
Has Social Networks	0.08	553	-0.015	-0.030	-0.032	-0.035
		138	(0.024)	(0.032)	(0.040)	(0.037)
The shop has a sign with its name	0.91	553	-0.020	-0.032	0.060	0.024
		138	(0.031)	(0.046)	(0.040)	(0.038)

Note: Column 1 presents the mean of each outcome of interest (each row) for non-treated units. Column 3 presents the regression coefficient for the treatment variable, including the observed length and depth of the premises, and fixed effects of activity and city. Columns 4 to 6 present the coefficients for the categorisation of treated in the high-treatment area (TH), treated in the low-treatment area (TL), and non-treated in the high-treatment area (CH) (the base is non-treated in the low-treatment area (CL)), with the same control variables. Finally, column 2 presents the number of observations and clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

The role of local promoters in helping
microentrepreneurs engage in digital
business training. The case of Expertienda

Supplementary Material

A Further details on *Expertienda*

The *Expertienda* development process included four steps: (i) benchmarking, where we analyzed previous online and traditional courses; an (ii) ethnographic research that complemented the quantitative surveys, with emphasis on eliciting the training needs, technological resources, and digital literacy of the targeted entrepreneurs; a (iii) co-creation methodology, in which designers, researchers, and some entrepreneurs met to discuss the contents to be included; and (iv) finally the digital solution development, which resulted in the final application. Table [A1](#) presents in detail the contents of the course.

From our BL and the ethnographic research, we determined that the target audience was common users of Android mobile phones with basic internet connections. Other devices like iPhones or laptops were far less commonly available in their businesses. As a result, the application was registered in the Google Play Store.

In terms of usage, most users would interact with the application for less than 20 minutes ([A1](#)), and none for more than one hour.

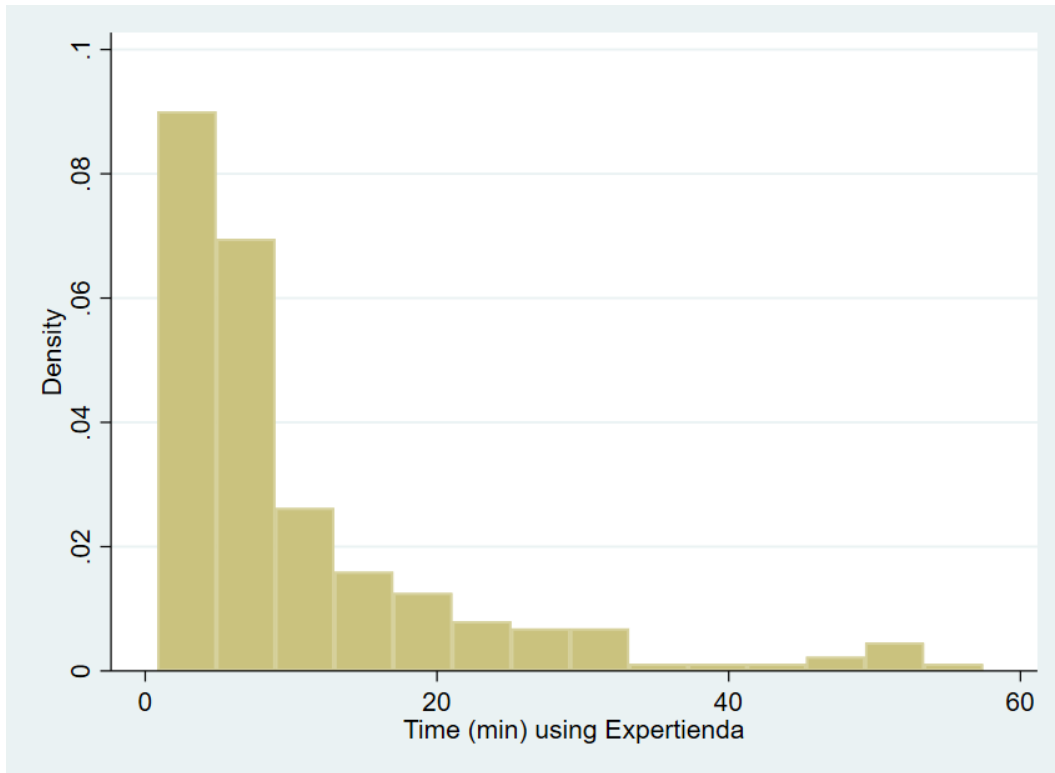
Table A1: Topics of the application

Module	Description
Customer loyalty	What are customer services? Do you know who your customers are? How to work customer service with your employees? How to provide a quality service? How to get your customers' loyalty?
Business management	How to manage efficiently your Business? How to record expenses, purchases, sales, and customers? How to manage inventory? How to manage suppliers? How to manage employees? Family and business relationships How to manage quality in the Business?
Finance	How to have healthy finances in the Business? How to fund your Business? How to handle the accounting of the Business? How to handle taxes and billing?
Marketing and Sales	What is marketing? Do you know your target market? How does your business look like? Product's display How to set prices? How to promote your business? How to make your customers come back? (POST-SALE)

B Timeline adjustments due to COVID

Colombia's strict lockdown started in late March 2020 and gradually started to end by early May 2020. Between April and May, we conducted a telephonic survey to determine which businesses of the original sample survived the strict lockdown. With this information, we designed the randomisation of the sample for the intervention, scheduled to be carried on in the second half of 2020. The first outbreak peaked in August 2020, and after it, there was relative normality in economic activity. Yet, the intervention was postponed due to the start of a second outbreak that peaked in January 2021. While mobility

Figure A1: *Expertienda* Usage



and economic restrictions were not imposed, the intervention would have posed a risk to both the field workers and the entrepreneurs. Finally, when the new case numbers of infected people stabilised and the vaccination program ran massively throughout the country, we started the fieldwork in April 2021. The intervention finished at the start of the third outbreak, in the middle of massive strikes that affected some of the main cities of the country, but at this stage, it consisted of telephonic follow-ups.

C Concepts

C.1 Digital training

Formal in-person business training is known to be effective for small firms in low and middle-income countries (McKenzie and Woodruff, 2014). Yet, the effectiveness of its cheapest alternative, digital training, is less known, but there are promising results in several sectors (Estefan et al., 2023; Chang, 2016).

A central concern of training microentrepreneurs with traditional educational interventions is their lack of interest. In our sample, less than 20% of the BL respondents had some training in the last two years, and 41% said they were not interested in any training. Experiences in different contexts show that these owner-managers are more willing to explore training involving local and self-developed knowledge and directed to rapidly adopt the contents into their business (Kelliher et al., 2014; Reinl and Kelliher, 2014). As a result, we test the following hypothesis:

*Hypothesis 1: the intervention using local promoters increases *Expertienda* usage.*

C.2 Diffusion through social networks at the geographic level

Entrepreneurs are expected to be in central positions of social networks, as they might exploit the flow of ideas, knowledge, and capital (Stuart and Sorenson, 2005). Thus, the diffusion of ideas should be common. The literature on the diffusion of technologies through social networks is extensive (Young, 2006; Acemoglu et al., 2011). We focus on the simplest type of social networks, those given by geographical location (Carlino and

Kerr, 2015; Lengyel et al., 2020).¹⁸ Yet, the flow of information across microentrepreneurs might be restricted: De Andrade et al. (2013) show that shop owners were unaware of inspectors visiting their neighbours. Hence, we test the following hypothesis:

Hypothesis 2: Take-up of the course increases with the geographic density of the treatment.

C.3 Business performance

Expertienda's content is designed to improve the number of business practices, financial inclusions, and formality adopted by the business. We formally test the following hypothesis:

Hypothesis 3: *Expertienda's* users improve their business performance indicators.

For business performance indicators, we refer to the following concepts:

C.3.1 Business practices

Managerial capital is a factor relevant for firm growth and is a good predictor of productivity differences between organisations (Bloom et al., 2010; Bloom and Van Reenen, 2010; Bruhn et al., 2010). For microfirms, managerial capital might help firms to bypass the constraints imposed by lack of financing, for instance, (Bruhn et al., 2010). The level of managerial capital is commonly measured in small and microfirms with the accomplishment of a set of *business practices* that are known to be associated with productivity and sales (Bloom and Van Reenen, 2007; Anderson and McKenzie, 2022; Campos et al., 2017; Fabling and Grimes, 2007; Forth and Bryson, 2019; McKenzie and Woodruff, 2017; Maes

¹⁸We also measured social links among microentrepreneurs. However, as it is a sample and not a census, we cannot compute position indicators such as network centrality.

et al., 2005; McKenzie and Puerto, 2021).

In the survey, a set of 30 business practices are collected in both the BL and the FU through a self-completion questionnaire with binary questions, as is usual in the literature. *Expertienda* was designed to target some of them explicitly as a result of the co-creation focus groups. Practices that were perceived to be more relevant and easy to take-up by the potential users were selected.¹⁹

The scope of the previous research leads to consider that microestablishments that use *Expertienda* are more likely to increase their number of business practices.

C.3.2 Financial inclusion

Whether firms access financial products is well known to be related to its performance (Beck and Demirgüç-Kunt, 2006; Fowowe, 2017; Gorodnichenko and Schnitzer, 2013; Levine, 2005; Nizam et al., 2021; Van et al., 2021; Wellalage and Locke, 2016). Yet, there is no consensus on holding which products - for savings, for credit, and for insurance- entitle a firm as financially included. Usually, the applied literature relies on indexes that involve products for these three dimensions, including aspects such as knowledge, availability, and actual usage of the products (Demirgüç-Kunt and Klapper, 2013; Barajas et al., 2020; Girón et al., 2021; Nuzzo and Piermattei, 2020). The degree of usage of financial products is the result of (i) the supply and its barriers, in particular those arising from information asymmetries (Stiglitz and Weiss, 1981, 1992) or lack of formal financial markets for small firms needs, and (ii) the demand of products based on biased perceptions about costs and benefits (Nuzzo and Piermattei, 2020; Salignac et al., 2016). The concept is changing

¹⁹Our data allow us to estimate impacts over the entire set of 30 business practices, but we registered the RCT over the set presented in Table C1. In the appendix we explore an alternative index with all these variables.

rapidly due to the fast advance of mobile banking alternatives, and some aggregate-level index now include such products into the equation (Demirgüç-Kunt and Klapper, 2013; Adrian and Mancini-Griffoli, 2021).

For this study, on top of the common aspects of having a bank account for the business, having loans, and having insurance, we also include knowledge and usage of electronic wallets. Electronic wallets, which allow individuals to transfer small amounts of money to other individuals without a bank account or a credit card, have become extremely popular. The main reason is that individuals only need a mobile phone number, reducing dramatically the barriers to entry into the system. As above, we constructed a single index that represents the proportion of items that a firm accomplishes. Therefore, we expect that microestablishments that use *Experienda* are more incentivized to make use of financial instruments, in particular mobile money.

C.3.3 Formality

A firm that complies with all regulations to operate is considered formal. Yet, there is a wide variety on the characteristics of firms that do not comply with at least one requirement; for this reason, it is common to consider that there are several levels of informality (Perry, 2007; Trebilcock, 2005; Ulyssea, 2018; Gutierrez and Rodriguez-Lesmes, 2023). Following Gutierrez and Rodriguez-Lesmes (2023), extensive informal firms are those which do not comply with the registry of the business with both commercial and tax authorities, while intensive informal firms comply with such requirements but hire workers without lawful obligations.

For our analysis, we consider variables that are related with both extensive and intensive margin informality, including a self-report by the entrepreneur about the level of

formality. All these binary variables, presented in Table C1, are summarised into an index by using a simple average.²⁰ This suggests that the usage of *Expertienda* by microestablishments can increase the perception of the benefits of formality. This in turn can enhance their formality status.

Table C1: Components of indicator variables

Indicator	Variable	Mean at BL
Formality	Firms reports to be formal	74.7%
	Keeps accounting records	21.3%
	Business registry	74.0%
	Tax registry	79.5%
	Has the required approvals to operate	54.0%
	All of the workers received social insurance benefits	20.7%
	Business practices	0.572
	With your records, can you know your current amount of cash	69.4%
	Do you keep records of all of your transactions	64.8%
	Have you visited your competitors to know their prices?	36.7%
	Have you attracted clients with special sales?	56.3%
	Have you tried to bargain prices with providers	59.0%
Financial inclusion	Separate account for the business	15.6%
	Has some type of insurance	13.7%
	Has savings	20.9%
	Has any loan	17.4%
	Has a loan with a bank	8.3%
	Knows about electronic wallets	25.8%
	Use an electronic wallet	12.9%
	Total Score	0.425

Note: The table was computed over the RCT sample (N=1,013) in ten cities of Colombia.

²⁰We selected a simple average for simplicity of interpretation, but other strategies like principal component analysis were also considered. Results are qualitatively the same as those presented in the main document.

D Baseline balance

Table D1: Balance on baseline outcomes

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) Arm 2	(5) Arm 3	(6) TH	(7) TL	(8) CH
Panel A. Balance at intervention								
Owner has tertiary education	0.34	998	-0.004 (0.030)	0.029 (0.040)	-0.039 (0.049)	-0.008 (0.035)	0.044 (0.049)	0.019 (0.046)
Female owner	0.60	998	-0.042 (0.037)	-0.020 (0.044)	-0.061 (0.052)	-0.029 (0.044)	-0.035 (0.050)	0.028 (0.053)
Located in a commercial zone	0.37	998	0.005 (0.061)	-0.009 (0.109)	0.081 (0.129)	0.018 (0.082)	0.047 (0.078)	0.048 (0.072)
Activity 1: convenience store	0.31	998	-0.016 (0.033)	-0.047 (0.040)	0.008 (0.053)	-0.044 (0.043)	-0.009 (0.045)	-0.049 (0.045)
Activity 2: prepared food	0.31	998	-0.036 (0.034)	-0.065 (0.054)	-0.077 (0.062)	-0.069* (0.042)	-0.093* (0.055)	-0.097** (0.045)
Activity 3: health, beauty, other services	0.15	998	0.041 (0.025)	0.102*** (0.036)	0.079* (0.041)	0.065* (0.033)	0.049 (0.047)	0.050 (0.042)
Use internet for business	0.50	998	0.046 (0.034)	0.049 (0.042)	0.038 (0.053)	0.055 (0.042)	0.096* (0.056)	0.046 (0.049)
Number of workers	1.56	998	0.003 (0.105)	0.116 (0.154)	-0.004 (0.199)	-0.057 (0.148)	0.019 (0.156)	-0.104 (0.128)
Large commercial space	0.42	998	0.031 (0.037)	-0.009 (0.055)	0.037 (0.066)	-0.006 (0.050)	-0.020 (0.052)	-0.100* (0.051)
Total depth of commercial space (m)	5.66	997	-0.039 (0.488)	0.036 (0.735)	0.114 (1.020)	-0.443 (0.640)	-0.716 (0.681)	-1.161** (0.494)
Total width of commercial space (m)	4.70	997	-0.110 (0.351)	0.466 (0.499)	0.354 (0.730)	-0.073 (0.463)	-0.468 (0.391)	-0.138 (0.471)
Owner born in the same municipality	0.66	998	-0.006 (0.033)	-0.011 (0.042)	-0.002 (0.051)	-0.001 (0.043)	-0.003 (0.055)	0.012 (0.054)
Owner has experience as entrepreneur	0.06	998	-0.007 (0.022)	0.046* (0.027)	0.044 (0.026)	-0.000 (0.028)	-0.013 (0.034)	0.008 (0.029)
Risk aversion exercise	3.04	998	-0.029 (0.098)	0.078 (0.116)	0.077 (0.152)	0.083 (0.119)	-0.003 (0.149)	0.228* (0.122)
Cognitive Reflection Test: reflective	0.57	998	-0.011 (0.047)	0.045 (0.058)	0.087 (0.072)	0.006 (0.055)	-0.110* (0.066)	-0.025 (0.061)
Cognitive Reflection Test: intuitive	1.69	998	0.010 (0.044)	0.019 (0.056)	-0.039 (0.075)	-0.006 (0.051)	0.164** (0.064)	0.060 (0.068)
Personal initiative	4.12	997	0.049 (0.046)	0.024 (0.071)	0.097 (0.074)	0.091 (0.059)	-0.083 (0.089)	0.003 (0.081)
Perseveration	4.10	998	0.152** (0.075)	0.044 (0.091)	0.213* (0.124)	0.168* (0.089)	0.005 (0.115)	-0.054 (0.114)

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Balance on baseline outcomes [Continued]

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) Arm 2	(5) Arm 3	(6) TH	(7) TL	(8) CH
Panel B. Balance on Business found at FU								
Owner has tertiary education	0.33	528	0.033	0.035	-0.054	0.013	0.063	-0.014
		141	(0.040)	(0.053)	(0.061)	(0.052)	(0.072)	(0.060)
Female Owner	0.56	528	-0.003	0.069	0.011	0.043	-0.040	0.054
		141	(0.049)	(0.074)	(0.079)	(0.066)	(0.072)	(0.074)
Located in a commercial zone	0.45	528	-0.007	-0.052	0.071	-0.027	0.008	-0.023
		141	(0.068)	(0.117)	(0.133)	(0.096)	(0.091)	(0.079)
Activity 1: convenience store	0.31	528	-0.066	-0.023	-0.035	-0.089	-0.141**	-0.085
		141	(0.043)	(0.056)	(0.070)	(0.059)	(0.062)	(0.056)
Activity 2: prepared food	0.23	528	-0.024	-0.081	-0.075	-0.050	-0.042	-0.055
		141	(0.046)	(0.074)	(0.083)	(0.057)	(0.072)	(0.063)
Activity 3: health, beauty, other services	0.15	528	0.064**	0.076	0.115**	0.082*	0.051	0.023
		141	(0.032)	(0.051)	(0.056)	(0.047)	(0.055)	(0.057)
Use internet for business	0.57	218	0.139**	0.176*	0.227**	0.205**	0.084	0.071
		104	(0.069)	(0.102)	(0.113)	(0.100)	(0.130)	(0.102)
Number of workers	2.15	218	-0.314	0.985	0.748	-0.013	-0.765	0.247
		104	(0.413)	(0.636)	(0.575)	(0.672)	(0.633)	(1.011)
Large commercial space	0.53	528	0.006	-0.068	0.018	-0.041	-0.039	-0.105
		141	(0.045)	(0.059)	(0.070)	(0.061)	(0.066)	(0.069)
Total depth of commercial space (m)	6.81	460	-0.009	-0.198	-0.405	-1.315	0.207	-1.888
		140	(0.686)	(1.211)	(1.265)	(0.899)	(1.148)	(1.141)
Total width of commercial space (m)	5.48	528	-0.097	-1.188	-1.104	-1.031	0.434	-1.222
		141	(0.546)	(1.023)	(1.132)	(0.684)	(1.202)	(0.878)
Owner born in the same municipality	0.69	528	-0.036	-0.056	0.027	-0.000	-0.007	0.077
		141	(0.045)	(0.063)	(0.071)	(0.059)	(0.074)	(0.070)
Owner has experience as entrepreneur	0.22	170	-0.109	-0.076	-0.258**	-0.057	-0.031	0.096
		91	(0.082)	(0.105)	(0.100)	(0.102)	(0.134)	(0.112)
Risk aversion exercise	3.01	528	-0.010	0.056	0.215	0.130	-0.032	0.220
		141	(0.141)	(0.160)	(0.198)	(0.160)	(0.221)	(0.163)
Cognitive Reflection Test: reflective	0.57	528	-0.028	0.090	0.141	0.012	-0.116	0.012
		141	(0.064)	(0.075)	(0.093)	(0.074)	(0.103)	(0.083)
Cognitive Reflection Test: intuitive	1.81	528	0.019	0.030	-0.059	-0.017	0.112	-0.003
		141	(0.066)	(0.081)	(0.099)	(0.076)	(0.100)	(0.089)
Personal initiative	4.06	527	0.071	-0.033	0.004	0.094	-0.054	-0.038
		141	(0.063)	(0.088)	(0.087)	(0.073)	(0.117)	(0.095)
Perseveration	3.99	528	0.149	-0.025	0.211	0.168	-0.083	-0.111
		141	(0.102)	(0.123)	(0.154)	(0.117)	(0.171)	(0.152)

Note: Column 1 presents the mean of each outcome of interest (each row) for non treated units. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

Table D2: Balance on baseline outcomes

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) Arm 2	(5) Arm 3	(6) TH	(7) TL	(8) CH
Panel A. Balance at intervention								
Total index	0.42	1013	0.012	0.032	0.015	0.006	0.023	-0.005
		146	(0.013)	(0.020)	(0.023)	(0.016)	(0.022)	(0.017)
Formality index	0.51	1013	-0.005	0.027	-0.011	-0.022	0.032	-0.010
		146	(0.018)	(0.030)	(0.033)	(0.022)	(0.029)	(0.028)
Business practices index	0.58	1013	0.027	0.040	0.027	0.027	0.013	-0.008
		146	(0.021)	(0.033)	(0.036)	(0.026)	(0.034)	(0.030)
Financial inclusion index	0.17	1013	0.015	0.031*	0.031	0.014	0.026	0.004
		146	(0.013)	(0.018)	(0.021)	(0.018)	(0.025)	(0.021)
Predicted total index	0.42	994	0.001	0.002	0.007	0.002	-0.003	-0.001
		146	(0.005)	(0.007)	(0.009)	(0.006)	(0.007)	(0.006)
Any training in the past	0.17	1013	0.033*	0.040	0.035	0.044*	0.011	0.009
		146	(0.017)	(0.026)	(0.030)	(0.023)	(0.024)	(0.025)
Panel B. Balance on microestablishments found at FU								
Total index	0.41	528	0.018	0.038	0.016	0.006	0.029	-0.013
		141	(0.017)	(0.027)	(0.031)	(0.022)	(0.024)	(0.025)
Formality index	0.53	528	-0.011	0.031	-0.032	-0.047	0.027	-0.036
		141	(0.026)	(0.039)	(0.043)	(0.033)	(0.035)	(0.035)
Business practices index	0.54	528	0.049*	0.044	0.037	0.052	0.036	-0.004
		141	(0.028)	(0.045)	(0.053)	(0.036)	(0.038)	(0.038)
Financial inclusion index	0.18	528	0.016	0.040	0.044	0.013	0.024	0.001
		141	(0.018)	(0.026)	(0.028)	(0.024)	(0.033)	(0.031)
Predicted total index	0.42	525	0.001	0.002	-0.000	-0.001	-0.006	-0.006
		141	(0.006)	(0.009)	(0.010)	(0.008)	(0.009)	(0.009)
Took part of any training program	0.23	218	0.013	0.103	0.111	0.002	-0.066	-0.050

Note: Column 1 presents the mean of each outcome of interest (each row) for non treated units. Column 3 presents the coefficient for the treatment variable in regression that controls for gender, education level, a dummy for usage of internet for business, a dummy for having premises in a commercial district, and fixed effects of city and economic activity. Columns 4 and 5 considers differences according to the treatment assignment groups (Arm 1: all treated; Arm 2: half treated; Arm 3: none treated). Columns 6 to 8 presents the coefficients for the categorisation of treated in high-treatment area (TT), treated in low-treatment area (TN), and non-treated in high-treatment area (NT) (the base is non-treated in low-treatment area (NN)), with the same control variables. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

E Other specifications

Table E1: ITT of the *Experiencia* intervention without Barranquilla y Bucaramanga

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) TT	(5) TN	(6) NT
Score Total	0.41	195	0.042 (0.031)	0.033 (0.048)	-0.032 (0.049)	-0.036 (0.051)
Score Dim 1. Formal sector	0.42	195	0.086* (0.049)	0.037 (0.071)	0.017 (0.069)	-0.089 (0.078)
Score Dim 2. Business practices	0.53	195	0.008 (0.057)	0.052 (0.083)	-0.061 (0.097)	0.037 (0.084)
Score Dim 3. Financial inclusion	0.30	195	0.032 (0.033)	0.010 (0.054)	-0.053 (0.067)	-0.057 (0.064)
How many clients (observed)	4.98	195	-0.870 (0.959)	-3.275** (1.543)	-3.895** (1.496)	-4.206*** (1.505)
Computed profits (10 USD)	71.77	195	-68.363 (94.208)	54.810 (50.046)	-3.768 (49.309)	186.311 (189.337)
How many employees (observed)	1.60	380	-0.081 (0.111)	-0.254 (0.162)	-0.249 (0.229)	-0.328 (0.222)
Has Social Networks	0.04	435	-0.010 (0.024)	-0.019 (0.037)	-0.023 (0.043)	-0.018 (0.046)
The shop has a sign with its name	0.86	435	-0.018 (0.040)	-0.021 (0.061)	0.087 (0.060)	0.039 (0.057)

Note: Column 1 presents the mean of each outcome of interest (each row) for non treated units. Column 3 presents the coefficient for the treatment variable in regression that also includes the observed length and depth of the premises, and fixed effects of activity and city. Columns 4 to 6 presents the coefficients for the categorisation of treated in high-treatment area (TT), treated in low-treatment area (TN), and non-treated in high-treatment area (NT) (the base is non-treated in low-treatment area (NN)), with the same control variables. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

Table E2: ITT effects of the *Experienda* intervention on the variables included in the index outcomes

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) TT	(5) TN	(6) NT
FO1: Self perception of formality	1.79	228	-0.116	0.076	0.066	0.358
		104	(0.136)	(0.197)	(0.256)	(0.222)
FO2: Accounting records	2.15	228	-0.046	-0.175	0.051	-0.146
		104	(0.108)	(0.149)	(0.162)	(0.179)
FO3: Commercial Registry	0.66	228	0.091	0.091	-0.051	-0.060
		104	(0.078)	(0.105)	(0.121)	(0.122)
FO4: Insured Workers	0.32	173	0.158*	0.210**	0.283*	0.129
		90	(0.086)	(0.105)	(0.151)	(0.132)
FO5: Tax registry	1.72	228	-0.246	0.234	0.107	0.848**
		104	(0.261)	(0.284)	(0.268)	(0.354)
FO6: Operating Permit	0.40	228	0.028	-0.009	0.046	-0.045
		104	(0.070)	(0.089)	(0.131)	(0.113)
MP1: How much cash it has on hand	0.73	228	0.044	0.051	-0.119	-0.059
		104	(0.070)	(0.084)	(0.097)	(0.080)
MP2: Records all sales and purchases	0.65	228	0.024	0.051	-0.188	-0.052
		104	(0.071)	(0.086)	(0.123)	(0.101)
MP3: Visited a competitor's business to learn their prices	0.37	228	-0.016	0.007	0.134	0.098
		104	(0.082)	(0.117)	(0.127)	(0.126)
MP4: Attract customers with special offers	0.56	228	-0.004	0.098	-0.038	0.134
		104	(0.072)	(0.104)	(0.120)	(0.109)
MP5: It tried to negotiate with a provider for lower prices for your raw materials	0.51	228	-0.082	-0.009	-0.095	0.100
		104	(0.091)	(0.134)	(0.159)	(0.136)
FI1: There is an exclusive savings account for this business	0.27	228	-0.076	-0.026	-0.072	0.074
		104	(0.056)	(0.091)	(0.111)	(0.116)
FI2: Bank loan or credit was requested and accepted with traditional banks (eg BBVA)	1.64	40	0.374	-0.088	-0.640	-0.816
		33	(0.535)	(1.084)	(1.275)	(1.178)
FI3: The firm currently has any insurance for family or business	0.11	228	0.136**	0.180**	-0.059	-0.021
		104	(0.057)	(0.086)	(0.071)	(0.079)
FI4: Firm knows an electronic wallet	0.71	228	0.128**	0.119	0.011	-0.063
		104	(0.054)	(0.073)	(0.105)	(0.105)
FI5: Firm has ever used an electronic wallet	0.56	228	0.052	0.072	-0.128	-0.048
		104	(0.064)	(0.100)	(0.123)	(0.125)
FI6: Firm has a loan	0.07	553	-0.011	0.013	0.007	0.051
		138	(0.025)	(0.026)	(0.041)	(0.038)

Note: Column 1 presents the mean of each outcome of interest (each row) for non treated units. Column 3 presents the coefficient for the treatment variable in regression that also includes the observed length and depth of the premises, and fixed effects of activity and city. Columns 4 to 6 presents the coefficients for the categorisation of treated in high-treatment area (TT), treated in low-treatment area (TN), and non-treated in high-treatment area (NT) (the base is non-treated in low-treatment area (NN)), with the same control variables. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

Table E3: ITT effects of the *Experiencia* intervention on the variables included in the index outcomes without Barranquilla and Bucaramanga

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Treatment	(4) TT	(5) TN	(6) NT
Self perception of formality	1.77	195	-0.068 (0.147)	0.246 (0.226)	0.240 (0.287)	0.521** (0.241)
Accounting records	2.28	195	-0.104 (0.111)	-0.152 (0.183)	0.038 (0.189)	-0.019 (0.223)
Commercial Registry	0.58	195	0.132 (0.091)	0.080 (0.139)	-0.040 (0.159)	-0.124 (0.161)
Insured Workers	0.35	145	0.158 (0.097)	0.203 (0.124)	0.292* (0.169)	0.107 (0.160)
Tax registry	1.87	195	-0.363 (0.309)	0.288 (0.337)	-0.167 (0.331)	1.052** (0.425)
Operating Permit	0.33	195	0.053 (0.076)	-0.015 (0.107)	0.077 (0.159)	-0.082 (0.136)
How much cash it has on hand	0.67	195	0.070 (0.080)	0.067 (0.097)	-0.167 (0.118)	-0.080 (0.099)
Records all sales and purchases	0.57	195	0.072 (0.076)	0.088 (0.101)	-0.194 (0.141)	-0.064 (0.125)
Visited competitors to learn their prices	0.43	195	-0.084 (0.087)	-0.081 (0.142)	0.098 (0.153)	0.061 (0.161)
Attract customers with special offers	0.50	195	0.021 (0.081)	0.112 (0.127)	-0.049 (0.142)	0.100 (0.139)
Negotiate with a provider for lower prices for your raw materials	0.48	195	-0.040 (0.102)	0.072 (0.158)	0.007 (0.182)	0.165 (0.164)
There is an exclusive savings account for this business	0.23	195	-0.101* (0.056)	-0.193* (0.109)	-0.198 (0.131)	-0.156 (0.138)
Bank Loan	1.67	34	0.264 (0.576)	0.078 (1.984)	-0.590 (1.779)	-0.342 (2.157)
The firm has any insurance for Family or business	0.12	195	0.112* (0.061)	0.078 (0.103)	-0.124 (0.097)	-0.122 (0.100)
Electronic wallet knowledge	0.67	195	0.137** (0.059)	0.099 (0.090)	0.016 (0.123)	-0.090 (0.130)
Electronic wallet use	0.52	195	0.053 (0.069)	0.011 (0.119)	-0.168 (0.150)	-0.128 (0.154)
Has a loan	0.06	435	-0.002 (0.030)	0.029 (0.029)	0.039 (0.051)	0.066 (0.040)

Note: Column 1 presents the mean of each outcome of interest (each row) for non-treated units. Column 3 presents the coefficient for the treatment variable in regression that also includes the observed length and depth of the premises and fixed effects of activity and city. Columns 4 to 6 present the coefficients for the categorisation of treated in the high-treatment area (TT), treated in the low-treatment area (TN), and non-treated in the high-treatment area (NT) (the base is non-treated in the low-treatment area (NN)), with the same control variables. Finally, column 2 presents the number of observations and clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

F Instrumental variables approach

Finally, Table F1 shows the results of instrumenting actual usage with the treatment allocation. We find no significant results among the outcomes of interest. Similar results are found when considering the sample without Barranquilla and Bucaramanga (Table F2). Column 4 of the tables presents the first stage F statistic. The value is above 12 in most cases, which does not indicate weak instruments, but it is not strong enough to get relatively small standard errors. Hence, it is difficult to draw solid conclusions.

Table F1: Instrumenting *Expertienda* usage with treatment assignment

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Registered user	(4) Kleibergen-Paap rk Wald F
Score Total	0.44	228	0.291	12.61
Score Dim 1. Formal sector	0.46	228	0.666	12.61
Score Dim 2. Managment practices	0.56	228	-0.064	12.61
Score Dim 3. Financial inclusion	0.33	228	0.281	12.61
How many clients (observed)	5.04	228	-2.546	12.61
Computed profits (10 USD)	60.47	228	-365.599	12.61
How many employees (observed)	1.79	482	-1.180	19.84
Has Social Networks	0.08	553	-0.177	16.33
The shop has a sign with its name	0.91	553	-0.236	16.33

Note: Column 1 presents the mean of each outcome of interest (each row) for non-treated units. Column 3 presents the coefficient for the shop being in a high treatment area relative to being in a low treatment one in a regression that also includes the observed length and depth of the premises and fixed effects of activity and city. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

Table F2: Instrumenting *Experiencia* usage with treatment assignment without Barranquilla and Bucaramanga

Outcome variable	(1) Mean	(2) N Obs/ Cluster	(3) Registered user	(4) Kleibergen-Paap rk Wald F
Score Total	0.41	195 83	0.326 (0.262)	12.17
Score Dim 1. Formal sector	0.42	195 83	0.676 (0.427)	12.17
Score Dim 2. Business practices	0.53	195 83	0.061 (0.418)	12.17
Score Dim 3. Financial inclusion	0.30	195 83	0.252 (0.267)	12.17
How many clients (observed)	4.98	195 83	-6.798 (6.960)	12.17
Computed profits (10 USD)	71.77	195 83	-534.286 (635.813)	12.17
Use internet for business	0.48	195 83	1.197 (0.691)	12.17
Some investment 2 years	0.60	195 83	0.201 (0.646)	12.17
How many employees (observed)	1.60	380 103	-0.676 (0.896)	20.06
Has Social Networks	0.04	435 104	-0.093 (0.215)	16.82
The shop has a sign with its name	0.86	435 104	-0.167 (0.353)	16.82

Note: Column 1 presents the mean of each outcome of interest (each row) for non treated units. Column 3 presents the coefficient for the shop being in a high treatment area relative to be in a low treatment one in a regression that also includes the observed length and depth of the premises, and fixed effects of activity and city. Finally, column 2 presents the number of observations and of clusters included (determined by the specific dependent variable). Clustered standard errors in parentheses. Significance level: * 0.1 ** 0.05 *** 0.01.

G Costs and comparison with other studies

Table G1: Detailed costs of intervention

Activity	Cost (USD)
Diagnosis of business consulting needs	32,573.28
Qualitative research and pilot	57,003.25
Training program content development	32,573.28
Mobile application development maintenance	40,716.61
Total Fixed costs	162,866.44
Total variable costs (10 cities)	3,123.03
Total costs	165,989.48
Per capita fixed cost (644 treated units)	252.89
Per capita variable cost (644 treated units)	4.85

Table G2: Related experimental studies

Author	Cost (USD)	Type	Treatment on	Effect
Estefan et al. (2023)	440	Digital training, mobile application with reproducible video capsules	Business practices	0.050*** (0.015)
Attanazio et al. (2019)	22	Financial education via a tablet-based application	Financial knowledge	0.201** (0.033)
			Keeps written accounts	0.032 (0.020)
			Formal savings	0.030** (0.013)
Campos et al. (2017)	756	Personal initiative training	Business practices	0.054*** (0.007)
			Access to finance index	0.147*** (0.040)
de Mel et al. (2014)	126 to 131	Five day course	Profits	0.024 (0.075)
			Capital stock	-0.067 (0.062)
Anderson et al. (2014)	900	80 hours- 2 months	Business practices	0.260***
Karlan and Valdivia (2011)		22 weekly business training sessions	Formality	0.01 (0.011)
			Business knowledge	0.08 (0.055)

Figure H1: Qualitative survey

Topical Guide	
TOPICS TO BE ADDRESSED	GUIDING QUESTIONS
1. Rapport	1.1. Moderator's presentation 1.2. Explain purpose of the interview and duration 1.3. Presentation of the shopkeeper (age, family composition, number of employees)
2. Covid-19 Context	2.1. How do you see your business 5 years from now? 2.2. How did the pandemic affect your business? 2.3. What were the main changes you had to make as a result of the pandemic? 2.4. What role does technology play in your business?
3. Deployment	3.1. How did you hear about the Exptienda (App) / Con-Hector training? 3.2. What did they tell you when they invited you to download the App or interact with the WhatsApp chat? 3.3. What motivated you to download the App or interact with the WhatsApp chat? (users) 3.3. Why were you not motivated to download the App or interact with the WhatsApp chat (non-users)?
4. Interaction with Exptienda	Questions for Exptienda users only: 4.1. How did the application go? 4.2. What did you like most about the application? 4.3. What do you remember about the application? 4.4. How long did it take you to complete the training? 4.5. At what times (day/times) did you conduct the training? 4.6. At some points did you have problems or were you unable to move forward? 4.7. What did you like least about the application? 4.8. Do you currently have the application downloaded? 4.9. Have you shared it with anyone else? 4.10. Have you recommended it to anyone? 4.12. Do you currently use the application? 4.13. In a few words: what was the main contribution of Exptienda to your business? Questions for Con-Hector users only: 4.1. How did you do with the WhatsApp chat? 4.2. What did you like most about the chat? 4.3. What do you remember about the chat? 4.4. What type of information do you most value having received through the chat?
5. Changes	Questions for Exptienda users only: 5.1. What is the content or message you remember most from the training? 5.2. Is there anything new you have started doing as a result of the training? 5.3. Have you considered any changes in your business as a result of the training? 5.4. Do you have any marketing and sales strategies that you have recently incorporated into your business? 5.5. Do you have a customer loyalty strategy that you have recently incorporated? 5.6. Do you have any strategies for managing your business that you have recently incorporated? 5.7. Do you have a strategy for managing your business finances that you have recently incorporated?
6. Suggestions	6.1. What suggestions do you have to improve our tools? 6.2. How would you like to be contacted in the future?

H Qualitative analysis