

# Running Ahead or Moving Together? Individual and Group Consulting for Female Entrepreneurship <sup>\*</sup>

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## Abstract

This study evaluates cost-effective strategies for transferring management skills to female entrepreneurs in urban Peru, particularly established SME owners and managers. Through a randomized experiment, we compare the impact of individual and group-based consulting on these groups. Both consulting formats led to better business practices and to sizable increases in sales (32%) and profits (24%), with no statistically significant difference between them. Group consulting also improved participants' business networks and practices through peer learning, though its effectiveness was sensitive to group composition. Individual consulting had stronger effects among larger, more established firms with stronger networks at baseline. These findings suggest that while group consulting offers a scalable, cost-effective alternative, participant selection should match high-performing firms with strong networks to individual consulting, while assigning others to well-designed group sessions that manage within-group heterogeneity.

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# 1 Introduction

A growing body of literature in development economics evaluates the barriers that affect the growth of micro, small, and medium-sized firms (MSMEs), especially in developing economies. Millions of men and women in developing countries run micro and small businesses, often not as Schumpeterian entrepreneurs but because they are excluded from the formal labor market. These businesses frequently remain trapped in a state of low productivity and low profitability, with limited likelihoods of transitioning into a steady growth path (Jayachandran 2021; La Porta and Shleifer 2014; Schoar 2010). Unfortunately, this pattern is particularly pronounced for women, who are frequently forced to balance labor market participation with household responsibilities (Duflo 2012), and thus tend to operate smaller and less productive firms (De Mel et al. 2014; Jayachandran 2021).

Cross-sectional data shows that firms with better business practices tend to have higher profits (Bloom and Van Reenen 2007; McKenzie and Woodruff 2017), suggesting that these female entrepreneurs could benefit from training or technical assistance aimed at improving their business practices, which in turn could boost their firms' productivity and profitability. However, recent rigorous evaluation studies struggle to provide tools for closing this gender gap in firm performance. While many studies show that business training leads to improvements in the business practices aligned with the interventions, the effects on sales and profits - both highly volatile outcomes- are mixed and often include null impacts (McKenzie et al. 2021).

Shifting from business training to consulting can facilitate recommendations specific to the entrepreneur's own business. This approach moves from group training sessions at a designated location to personalized visits from a consultant, who typically diagnoses bottlenecks and suggests innovations to overcome them. For example, Bloom et al. (2013) studied the impact of a program offering free consulting on business practices to large textile firms in India, finding that the intervention led to a 17% increase in productivity in the short term and to opening more production plants in the long term. The authors suggest that while information was a key barrier, the lack of managerial time limited the role of competition in concentrating production in more efficient firms. Bloom et al. (2020) found that nine years after the intervention, the firms that received consulting exhibited higher worker productivity and were more likely to export.

Similarly, Bruhn et al. (2018) explored whether subsidized consulting could also benefit micro and small firms (with an average of 14 workers). In their study of such firms in Puebla, Mexico, they found that a one-year consulting program had positive effects on entrepreneurial spirit, productivity, and return on assets. Notably, five years after the program ended, treated firms showed a 50% increase in both their number of workers and their wage bills. Additionally, Valdivia (2015) showed that complementing traditional business training with consulting support increased sales by around 20% in Peru, with this positive effect persisting two years after the treatment concluded. On the other hand, Karlan et al. (2015) did not find an effect of consulting on microentrepreneurs in Ghana. Finally, Anderson and McKenzie (2022a) compared different

interventions in Nigeria - business training, consulting, insourcing, and outsourcing in marketing and finance- finding that all interventions except business training had a positive effect, though consulting was twice as expensive.

Overall, recent evidence suggests that micro and small firms in developing countries are often constrained by the management skills available to them, and that one-to-one consulting can help them address these limitations more effectively than business training, with effects persisting several years after the intervention (McKenzie et al. 2021). However, a key policy challenge is that such interventions are expensive and difficult to scale up without requiring entrepreneurs to share part of the cost. To address this, it is necessary to develop interventions that engage both financial constraints and uncertainty about the quality of the consulting services. Additionally, finding enough qualified consultants to serve millions of micro and small entrepreneurs might be challenging.

It is therefore crucial to understand the mechanisms through which one-to-one consulting leads to gains in productivity and profits. The most direct mechanism is the provision of information, as consultants help entrepreneurs diagnose management problems and identify practices to overcome them. However, many consulting interventions also include follow-up visits to monitor progress on action plans and assist with the adoption of new management practices. These follow-ups may exert social pressure, helping entrepreneurs overcome behavioral constraints such as limited attention and procrastination, both significant barriers to adopting profitable business practices in developing countries (Beaman et al. 2014; Bloom et al. 2013; Hanna et al. 2014; Kremer et al. 2019; Lenz and Valdivia 2023).

In this context, it seems natural to hypothesize that group consulting could help micro and small entrepreneurs adopt new business practices. By increasing the number of entrepreneurs served by each consultant, group sessions can simultaneously assist several entrepreneurs, decreasing the cost of consulting. Moreover, group interactions can generate peer pressure and support, leveraging the diverse information and experiences within each group. The reduced time with consultants could be offset by social learning processes, where individuals are more likely to adopt costly management practices when they observe their more experienced and successful peers doing the same. Group discussions could likewise provide mutual assistance, along with peer pressure or moral support to implement the innovations outlined in their business plan, which could compensate for the shorter consultant time.

Iacovone et al. (2022) compared individual and group consulting in auto-parts firms in Colombia, finding that the group-based intervention had a greater impact on firm size, whereas individual consulting had a smaller and non-significant effect. Our paper differs from Iacovone et al. (2022) in several ways. First, our sample includes smaller firms, with an average of 3 employees and fewer years of operations. Second, our study covers a variety of sectors, not just auto-parts. Third, our sample size is approximately 10 times larger, which should increase the power of our estimates. Additionally, we study heterogeneous effects to highlights which types of firms benefit most from the interventions. Also, recent evidence suggests that not all contexts allow

for the exchange of information among peers, which may limit their ability to influence behavior related to key personal and business decisions (Jain and Khandelwal 2023). While we do not directly address this issue, we do document that if consulting groups are too heterogeneous, the consulting can become less effective.

Specifically, in this paper we present the results of an experiment in which we randomly assigned free consulting services to established female SME owners in urban Lima and Arequipa, the two largest cities in Peru. The labor productivity in Peru is 28.3%, the average productivity of the OECD (ILO 2023), showing scope for improvement. We recruited female SME owners from four sectors: handicrafts, textiles, food processing, and restaurants. All the participants had been operating their firms for at least two years and had expressed interest in receiving business training support. A total of 1,098 female entrepreneurs were recruited in six cohorts.

On average, both individual and group consulting had significant positive effects on participants' business outcomes, with sales increasing by 32% and profits by 24%. The effects did not differ significantly between the two groups, suggesting that group consulting can be a cost-effective alternative due to its lower implementation costs. Business practices also improved: individual consulting enhanced marketing practices, while group consulting improved financial planning. The impact of individual consulting varied depending on firm characteristics. More productive firms, with more employees and stronger initial business practices, experienced greater benefits. Effects were also larger for firms with pre-existing connections. Moreover, firms that saw the highest profit growth were also those that demonstrated better business practices at follow-up. These findings indicate that individual consulting is most effective for larger, well-networked firms.

On the other hand, the effects of group consulting did not vary with initial firm characteristics. However, we find evidence of peer learning in business practices: individual improvements are positively correlated with the group's overall change of business practices. The increase in business practices is negatively influenced by the group's maximum baseline level of practice. Therefore, group consulting is a valuable strategy for fostering business practices and peer learning, provided that group composition is carefully managed to avoid excessive heterogeneity.

The rest of the paper is organized into four sections, including this introduction. [Section 2](#) describes the interventions and the experimental design. [Section 3](#) presents the data used, [Section 4](#) reviews the estimation methods, and [Section 5](#) records the results. [Section 6](#) closes with some discussion of the results and the conclusions.

## 2 Intervention and experimental design

The intervention was implemented by Sector 3, a Peruvian NGO with long experience in providing business training services, especially to female entrepreneurs. They also conducted the recruitment process, which was designed to address the common challenges of low take-up and early dropout of training programs.

## 2.1 The two comparable interventions

We implemented two consulting-based interventions with similar content but different delivery methods: one offered individual consulting visits, while the other offered consulting sessions to groups of female entrepreneurs. Each group had 6-7 members. The themes covered in both groups were market identification and segmentation, company branding, social media management, fixed costs, break-even points, financial statements, profit and loss statements, human resources and personnel selection, and developing a work plan.

The individual consulting (IC) consisted of 24 hours of individual consulting, delivered through 2-hour weekly sessions over three months at a location of the participant's choice, typically their business site. In the case of peer-working groups (PWGs), group sessions were held in locations near the businesses or homes of the members, often rented by Sector 3, or occasionally in their central office<sup>1</sup>. In the sessions, facilitators used individual cases to address the same issues and illustrate the same business practices that were covered in the individual consulting visits.

The personalized nature of the IC sessions allowed for greater flexibility to tailor the topics, and the order in which they were discussed, to the specific needs of the entrepreneur. Furthermore, the advisor could also adapt the presentation of the topics to participants' skill levels. For the group consulting sessions, the facilitator's ability to make modifications was more limited, as the consulting had to be suitable to the different profiles of entrepreneurs in the group. Considering the larger number of entrepreneurs these groups supported, the consultant could not closely monitor each participant's progress, instead focusing on reviewing homework and discussing individual experiences.

Facilitators were trained to encourage active participation from group members, ensuring that discussions were both specific and relevant to the challenges and opportunities faced by all their businesses. In sum, the knowledge and practices promoted by facilitators were the same in the IC and PWG treatment arms, but the time dedicated by each facilitator to each entrepreneur was clearly lower in the PWG treatment. However, the PWG facilitators stayed in regular contact with their groups during the consulting periods, generally through Facebook or Whatsapp, to coordinate session schedules and answer questions about assignments. In some cases, this contact continued even after the consulting period, either to request business advice or on a more personal, friendly basis.

The facilitators were consultants with 4-5 years of experience working with SMEs and received training on the material developed by Sector 3. The materials covered topics such as SWOT analysis, branding, marketing analysis, with special emphasis on digital marketing, record-keeping

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<sup>1</sup>Like the IC participants, the PWG entrepreneurs were entitled to a total of 24 hours of group-based consulting sessions, distributed across weekly 2-hour sessions over three months. Most of the group sessions were scheduled in the afternoons or evenings, often after 6 pm, to accommodate the availability of the female entrepreneurs. Adjustments were allowed to maximize participation. In some cases, for instance, groups requested shorter sessions to avoid finishing too late, for safety reasons. When this occurred, the sessions were shortened to 90 minutes, with the total number of sessions increased accordingly over a four-month period.

of key activities, and cost and financial analysis.<sup>2</sup>

The consulting interventions, both individual and group-based, were inserted into a model that included three components: (i) a short basic training at the outset, (ii) consulting sessions, and (iii) an operational improvement workshop. The intervention began with a basic training module focused on the importance of establishing goals and action plans for their businesses. This module served as a motivational tool to encourage female entrepreneurs to participate in the core component of the intervention - either individual or group-based consulting sessions. All the selected entrepreneurs, including those assigned to the control group, were invited to attend these training sessions. This training comprised 16 hours, organized in four sessions of 4 hours each. The sessions were held in groups of 30 entrepreneurs per cohort and divided by treatment arm, before the random assignment was announced. The third component, the mid-intervention Operational Improvement Workshop, was likewise offered to both the IC and PWG treatment arms. It was implemented in the second half of the program (in the second month of each cohort) and focused on topics identified through needs assessments. These workshops were tailored for each treatment arm in each cohort and aimed to address technical deficiencies, industry-specific themes, or general obstacles common to many entrepreneurs, such as good practices in food handling. The workshops consisted of two sessions of three hours each; in practice, they became an opportunity for participants to maintain engagement with the program. Our analysis will compare the group and individual consulting groups to the control, which will isolate the effects of the consulting, as all participants received the basic training and the operational improvement workshop.

The average cost per participant was US\$253 in the control group, US\$1,285 in IC, and US\$686 in PWG.

## 2.2 Experimental design

The recruitment was conducted by the implementing partner. The initial eligibility constraint was set by the funding program, Women’s Leadership in Small and Medium Enterprises (WLSME). It targeted businesses managed or owned by women, with at least two years of operations and between 2 and 30 full-time staff, from both the formal and informal sectors<sup>3</sup>. Additionally, Sector 3 required participants to have completed high school, in order to avoid overly heterogeneous groups. Finally, the program was restricted to four business sectors- handicrafts, textiles, food processing, and restaurants - to reduce heterogeneity in business needs and tailor training to sector-specific challenges, following suggestions in McKenzie and Woodruff (2014).

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<sup>2</sup>The program also provided the IC and PWG participants with three *expert coupons* to use during the program. Each coupon provided one hour of consultation with a technical expert in various areas, including marketing design (websites, logos, branding), export procedures, quality control, accounting/taxation, and legal issues. Sector 3 developed a database of experts whom entrepreneurs could contact for these purposes, although participants also had the option to use their coupons with external consultants.

<sup>3</sup>The WLSME was a large USAID-funded program that promoted the use of randomized controlled trials to test the impacts of relevant innovations, to encourage entrepreneurship among female owners or managers of small and medium enterprises

The implementing NGO sought out eligible female entrepreneurs through ads in several mechanisms, including social media and radio announcements, but also through referrals from local district-level governments in Lima and Arequipa. They invited all interested to the nearest municipality building, where they were asked to fill out a questionnaire intended to establish eligibility and to collect an expressed interest in the training/consulting intervention and in engaging in a high-growth path. Interested, eligible applicants were invited to an interview, where interviewers assessed their commitment to firm growth, leadership, and active participation in the program. The interview also served as an opportunity to provide further details about the intervention’s components, including the use of random assignment as a key mechanism for generating rigorous evidence on the effectiveness of each treatment arm<sup>4</sup>.

Qualitative work conducted in parallel to the impact evaluation shows that despite this design, the group composition was heterogeneous in terms of the number of years they had operated their business, their familiarity with technology (such as Excel and Facebook), and their motives for having a business (economic need, compatibility with household responsibilities, family business, and the desire to have a business).

Power calculations, accounting for imperfect compliance and attrition, indicated that we needed to enlist approximately 360 entrepreneurs per treatment arm, to achieve a standard statistical power of 0.8 and properly capture the impacts of at least 0.2 standard deviations in profit levels. This calculation required Sector 3 to recruit a total of 1,080 eligible and interested female entrepreneurs, quite a challenge for an NGO of their size. The recruitment was carried out in six sequential phases, each aiming to recruit 180 eligible participants.<sup>5</sup> The first cohort was recruited during the first quarter of 2014, while the last cohort was implemented between May and September of 2015 (see [Figure 1](#)). Cohorts were evenly divided across the four business sectors. Regarding location, five cohorts were implemented in Lima and one in Arequipa, the two largest cities in Peru (see [Table 1](#)).

For each cohort, the 180 participants were invited to the initial training sessions and were randomly assigned to either the individual consulting group or the peer working group. The randomization was stratified by industry (textiles, handicrafts, restaurants, and food processing). At the final basic training session, entrepreneurs were informed of the treatment arm to which they had been randomly assigned. Those assigned to the control group were not contacted further. Those assigned to individual consulting were informed that a facilitator was going to contact them to schedule individual consulting sessions for the improvement of their business. For those assigned to the group sessions, participating entrepreneurs were informed they were entitled to participate in group sessions with a facilitator to work on improving their businesses. However, they were not immediately informed of the specific group to which they had been assigned. An

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<sup>4</sup>Those details clarified that there was a chance the participant would continue participating in the program with individual or group consulting

<sup>5</sup>In addition, a pilot study with a cohort of 90 women was implemented between September 2013 and March 2014.

SMS or e-mail message was sent later with the name of the facilitator, the composition of the group, and instructions related to the date and place of the first session. PWGs were formed randomly within each cohort, ensuring a balance of sectors in each group, as having too many entrepreneurs from the same sector could heighten the perception of competitive tension within the group. Each group consisted of 6 or 7 entrepreneurs, and on average, a facilitator worked full-time across both the IC and PWG treatment arms, managing about 6 entrepreneurs through IC and overseeing 4 working groups.

### 3 Data

#### 3.1 Data

We analyze both survey and administrative data. The baseline survey was conducted before the first workshop and prior to the announcement of the treatment assignment. The follow-up survey was applied continuously between 7 and 30 months after the end of the intervention for each cohort<sup>6</sup>. Surveys were conducted face-to-face at the participants' place of business, using the same questionnaire across waves. Survey implementation was carried out on a rolling basis by cohort to align with the intervention.

In [Table 2](#) we report the treatment assignment and data availability. The experiment includes 1,098 individuals. The first row shows that participants were almost evenly assigned across the three treatment arms, with 364-369 participants in each group.

The surveys included basic socio-demographic questions, along with questions on business practices, networks, and business performance (sales, profits, number of employees, and assets, among other data). We have baseline data for 96% of participants and follow-up data from 79% and 58% for the first and second follow-ups, respectively (see [Table 2](#)).

In the first follow-up survey, we have data for 80% of those assigned to any consulting group, while the second follow-up had a response rate of 61%. Attrition is higher in the control group for the survey data. We examine predictors of attrition in [Table B1](#). Individuals in the individual consulting and peer-working groups were more likely to respond to both follow-up surveys across all estimations (without controls, with controls, and with controls interacting with the treatment). We address attrition by presenting results using Lee bounds and various imputation methods for attriters.

#### 3.2 Summary statistics

[Table 3](#) provides the summary statistics for each treatment arm. Column [1] reports the number of observations for each variable. Column [2] reports the average level of each variable for the

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<sup>6</sup>The original plan was to collect 3 rounds of follow up surveys, around 6, 12, and 24 months after the end of the training. However, data collection for the follow-ups was complicated, due to some proportion of entrepreneurs who either could not be reached, asked for several postponements, or plainly refused to participate in the survey.

The first follow-up ranged from 7 to 25 months post-intervention, while the second ranged from 14 to 30 months post-intervention. Fifty-four observations had follow-ups beyond 30 months, which were excluded from the analysis to maintain a homogeneous time frame. If a participant did not respond to a survey wave, she was still contacted for subsequent waves.

reference group at baseline. Columns [3]-[4] present the marginal effect of being assigned to the specific treatment group, based on a regression that includes fixed effects for cohort-sector, and errors are clustered at the strata level. Column 5 shows the p-values for the test of whether IC and PWG are the same.

Firm characteristics are presented in Panel A. The average total annual sales and profits are US\$38,113 and US\$11,492, respectively. Average productivity, calculated as the residual of a regression of sales on the number of employees and assets, does not differ significantly across firms. The average number of employees is 3.3. Firms have, on average, 8 years of business experience and remain open for 11.7 months of the year. The IC firms were open 0.2 more months per year than those in the control group, while firms in the PWG group were almost 1 year younger than those in the control group.

Descriptive statistics for various measures of business practices are presented in Panel C. We measure business practices using an index that includes variables of Market Research & Advertising, Networking, Inventory Management, and Financial Planning.<sup>7</sup>

Regarding individual characteristics, participants in the control group were, on average, 41.5 years old, with 61% being married or cohabiting. About 77% managed their business alone, and for 83.2% the business was their sole source of income. Participants in the PWG treatment were 1.3 years younger, on average, than those in the control group, while entrepreneurs in the IC group were 10.9 percentage points less likely to be married or cohabiting. The average income as self-employed in the previous month was USD 1,257, and participants worked on average 48.875 hours per week.

Finally, Panel D shows measures of empowerment and networks. The index for sharing responsibility for domestic chores is balanced across groups.

Overall, participants in the IC group were open for 2% more months annually than the control group, were less likely to be married or cohabiting, were 5% more likely to manage the business alone, and could go to 1.5 more contacts for business advice than the control group. On the other hand, PWG businesses were, on average, 10% younger, and their participants were 1.3 years younger and devoted 9% fewer hours to domestic chores than the control group. Differences between IC and PWG groups (column (5)) include IC participants having older businesses, being open more months during the year, being less likely to be married or cohabiting, working fewer hours as self-employed, and having a larger network for business advice.

## 4 Empirical strategy

We use the random assignment of the individual and group-based consulting sessions to estimate their causal impact on firms' and individuals' outcomes. Considering the imbalance of some baseline characteristics presented, our main specification is a difference in difference regression, where we compare the changes of IC, PWG, and the control group.

We first study if consulting (individual or group) has an impact, using the following equation:

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<sup>7</sup>See [Appendix A](#) for a detailed list of the variables included in the index.

$$Y_{it} = \beta_0 + \beta_1 \times TREAT_i + \beta_2 \times After_t + \beta_3 \times TREAT_i \times After_t + \gamma X_i + \epsilon_i \quad (1)$$

Where  $Y_{it}$  denotes the outcome variable for individual  $i$  at time  $t$ ,  $TREAT_i$  is a dummy variable indicating assignment to either the IC or PWG treatment group, and  $X_i$  includes strata fixed effects (cohort and economic sector). We add a control for the number of months since the intervention, based on the timing of the follow-up survey for each individual.<sup>8</sup> Standard errors are clustered at the individual level. The coefficient  $\beta_3$  captures the average effect of being assigned to any consulting treatment group, relative to the control. We also estimate separate impacts for IC and PWG by replacing  $TREAT_i$  with treatment-specific dummies. This allows us to test whether the effects of IC and PWG differ significantly.

Romano–Wolf stepdown adjusted p-values (Clarke et al. 2020) are implemented to correct for multiple hypothesis testing within each family of outcomes. This procedure controls the family-wise error rate (FWER) and accounts for dependence among test statistics through bootstrap resampling.

#### 4.1 Heterogeneous treatment effects

To examine how treatment effects vary across different types of business owners and firm characteristics, we estimate heterogeneous treatment effects using the Generic Machine Learning (GML) method proposed by Chernozhukov et al. (2023)<sup>9</sup>. This approach provides a robust framework for evaluating heterogeneity within a randomized control setting with high-dimensional covariates, while still ensuring a valid method for inference.

Our objective is to assess whether there is heterogeneity in the main outcomes of our intervention, and whether individual and group consulting generate benefits for distinct subsets of individuals and businesses. We focus on profits, as they represent the primary performance indicator for firms. While both treatment arms show positive average effects, the underlying drivers of these effects may differ<sup>10</sup>. Since the algorithm is designed for two treatment statuses, we evaluate IC and PWG separately with respect to the control group.

##### 4.1.1 The algorithm

To set notation, let  $\tau(\mathbf{Z})$  denote the conditional average treatment effect (CATE) we aim to estimate:

$$\tau(\mathbf{Z}) = E[Y(1) - Y(0)|\mathbf{Z}]$$

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<sup>8</sup>We report results with controls selected using the double-lasso procedure proposed by Belloni et al. 2014, an IV strategy identifying the LATE and using ANCOVA specification. These robustness checks are presented in Appendix C, Appendix D, and Appendix E, respectively. The results are qualitatively similar.

<sup>9</sup>Recent empirical applications of this method include Baiardi and Naghi (2024), Athey et al. (2024), and Bryan et al. (2024).

<sup>10</sup>Results using sales as the outcome follow a similar pattern, reinforcing the robustness of the findings.

Where  $Y(1)$  and  $Y(0)$  represent the potential outcomes under treatment and control, respectively, and  $\mathbf{Z}$  denotes our vector of covariates at baseline.

We implement the estimation of  $\tau(\mathbf{Z})$  using a cross-fitting version of the Generic Machine Learning (GML) algorithm, following Athey et al. (2024)<sup>11</sup>.

The algorithm begins by randomly partitioning the sample into 5 folds of approximately equal size. For each fold  $k$ , we use the remaining folds as the training set to fit three machine learning estimators of  $\tau(\mathbf{Z})$ .<sup>12</sup> This procedure is repeated across all folds, ensuring that predicted treatment effects  $\tau(\mathbf{Z})$  are generated for every observation in the sample.

Next, we estimate the following regression to assess the existence of heterogeneity:

$$Y = \alpha \cdot X_i + \beta_1 \widetilde{\text{TREAT}}_i + \beta_2 \widetilde{\text{TREAT}}_i \cdot \widetilde{\tau}(\mathbf{Z}) + \epsilon \quad (3)$$

Where  $X_i$  denotes the vector of baseline characteristics used to examine heterogeneous effects<sup>13 14</sup>. The coefficient  $\beta_1$  represents the average treatment effect (ATE), while  $\beta_2$  captures the extent to which  $\tau(\mathbf{Z})$  explains the treatment effect heterogeneity. A  $\beta_2$  that is significant and close to one indicates that the predicted treatment effects correctly capture the real heterogeneity.

Subsequently, we use  $\tau(\mathbf{Z})$  to divide the sample into 4 groups and estimate the following regression to obtain the Group Average Treatment Effects (GATES):

$$Y_i = \alpha \cdot X_i + \sum_{k=1}^4 \gamma_k \cdot \widetilde{\text{TREAT}}_i \cdot 1(G_k) + \eta_i \quad (3)$$

where  $G_k$  denotes the set of firms in the  $k$ th group. The coefficient  $\gamma_k$  represents the average treatment effect for group  $k$ . If the difference  $\gamma_4 - \gamma_1$  is significantly different from zero, this provides evidence of heterogeneity between the most and least affected groups.

The algorithm is repeated 100 times with different random partitions of the sample. We report the median value of the coefficients of interest<sup>15</sup>, along with their associated confidence intervals and significance levels.

Finally, upon detecting heterogeneity in treatment effects, we conduct a Classification Analysis (CLAN) to explore how the most and least affected individuals differ in terms of their baseline

<sup>11</sup>Following Athey et al. (2024), we adapt the original GML algorithm to a cross-fitting framework to estimate  $\tau(\mathbf{Z})$ . This approach increases the number of observations used to fit the CATE while enabling inference on the full sample.

<sup>12</sup>Any machine learning method can be used for this step. While these estimators may be biased and are not required to be consistent, they should capture heterogeneity in the treatment effects. In our application, we use elastic net, neural networks, and random forests. The estimator with the best prediction performance is selected based on out-of-sample scores.

<sup>13</sup>The analysis incorporates the full set of baseline covariates detailed in Table 3, including firm characteristics, level of business practices, individual-level attributes, and multidimensional measures of empowerment and network embeddedness

<sup>14</sup> $\widetilde{\text{TREAT}}_i$  is defined as  $(\text{TREAT}_i - p(\mathbf{Z}))$ , where  $p(\mathbf{Z})$  is the propensity score, reflecting the probability of assignment to treatment.  $\hat{\tau}(\mathbf{Z})$  denotes the centered predicted CATE, i.e.,  $\tau(\mathbf{Z}) - \bar{\tau}(\mathbf{Z})$ . We use the notation from Bryan et al. (2024) to facilitate interpretation of the coefficients  $\beta_1$  and  $\beta_2$ .

<sup>15</sup>Confidence intervals and p-values are constructed using the method described in Chernozhukov et al. (2023).

characteristics.

## 5 Results

In this section, we first present the main results on business outcomes using Equation (1). Next, we examine whether there are heterogeneous effects for the IC and PWG treatments. Finally, we investigate whether the composition of the PWG groups influences its effects. The latter two sections allow us to explore whether observable characteristics help identify those who benefit most from the interventions, as well as the mechanisms through which group training may be effective.

### 5.1 Take up

Table 4 shows there was lower participation in the group-based consulting arm. Of those assigned to IC, 93% began their participation and 89% finished all 24 sessions. In contrast, only 84% of those assigned to PWG started the group-based consulting sessions and just 68% completed the sessions.

Table 4 also shows that younger entrepreneurs, who have less access to business networks, were more likely to drop the PWG program. Another key factor explaining program take up is the business tenure: the longer the business had been operating, the more likely its owner was to engage with the program, regardless of the treatment arm they were assigned to.

### 5.2 Average treatment effects

All the tables below follow the same structure: Column 1 shows the number of observations, Column 2 documents the average in the control group, Columns 3 and 4 display the impacts of IC and PWG, respectively, Column 5 presents the differences between IC and PWG, and Column 6 shows the effect of the pooled treatment (IC or PWG).

In Table 5, consulting services are associated with an increase in annual sales of US\$12,029.5, which represents a 31.6% rise compared to the control group mean. This effect is significant for both the IC and PWG treatments. Consulting also positively impacts annual profits, with an increase of 23.8% relative to the control group (p-value=0.03). Both outcomes remain robust to the inclusion of adjusted p-values. No significant effects are observed on Assets, Total Factor Productivity, or the number of Employees.<sup>16</sup>

Table 6 presents the average impact on empowerment and networks.<sup>17</sup> Both treatment arms were expected to increase empowerment, while a direct effect on networks was anticipated only

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<sup>16</sup>We also have access to tax data from the national tax authority (SUNAT), including information of the number of formal employees and firm's tax status. Firms were identified in SUNAT's open online records using the entrepreneurs' RUC (*rol único contribuyente*), which uniquely identifies the economic activities of taxpayers. If the RUC was not available, firms were searched according to their national identity number (DNI, *documento nacional de identificación*). All participants had only one firm listed in the tax data. The monthly data was obtained at the end of the third quarter of 2018 for the September 2017 to August 2018 period, which corresponds 24 to 45 months after the intervention, depending on the cohort. We found 90% of the individuals in the tax data (see Table 2, last row). We found no impact on employment using this data (See appendix G).

<sup>17</sup>Table A1 presents the components of each index.

from PWG. Panel A shows that although most coefficients are positive, there were no significant impacts on empowerment, as measured by indicators of shared household responsibilities, business decision-making, and pro-gender attitudes. In Panel B, we use three measures of networks: (1) business networks, which includes membership in business associations, meetings with business leaders, business contacts, and number of individuals from whom advice has been sought; (2) an index of societal participation, which captures membership in cultural, sport, religious, political, and NGO groups, among others; and (3) a comprehensive network index that aggregates both measures.

The point estimate for PWG on the network index is positive, while for IC, it is almost zero. Although both estimates are non-significant, the difference between them is significant (p-value = 0.065), indicating that group consulting enhances networks compared to individual consulting, but does not with respect to the control group. The point estimates for societal participation are positive and not significant for both IC and PWG, with no significant differences between the groups. However, for the business network index, the point estimate is negative for individual consulting and positive for group consulting, with a significant difference between IC and PWG (p-value=0.045). The point estimate for individual consulting in the business network index suggests a tendency toward isolating participants, whereas the estimates for group consulting indicate an increase in networks among participants.

Regarding mechanisms, [Table 7](#) shows the overall impact on business practices.<sup>18</sup> Although both group and individual consulting have positive coefficients in the aggregate index, only the effect of group consulting is statistically significant at the 10% level based on Romano-wolf adjusted p-values, improving practices by 0.17 standard deviations. These improvements align with the literature; for instance, Iacovone et al. (2022) report increases of 8-10 percentage points. While the coefficients are not statistically different (p-value=0.189), the point estimate for PWG is nearly three times that of IC. Consistently, IC had a significant impact on only two of the 33 business practices measures, whereas PWG showed improvement in five of them. See [Tables A3, A4, A5, and A6](#).

The observed effect in PWG is mainly driven by financial planning practices, which increased by 0.23 standard deviations. This metric includes, for instance, P&L statements, cash flow and general accounting preparation, use of financial analysis tools, and performance reviews. Moreover, the improvement in the financial planning index is statistically different between individual and group consulting (p-value=0.085). Although IC did not have an effect on average business practices, IC participants improved their marketing practices (e.g., pricing strategies, market research, digital marketing, and customer attraction) by 0.15 standard deviations.

Finally, Panel B of [Table 7](#) reveals that the PWG intervention significantly increased the probability of participants relying on their business as their unique job by 13 percentage points, relative to the control group. Furthermore, participants in PWG reported, on average, working

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<sup>18</sup>Table [A3](#) presents the components of each index.

1.7 fewer hours as dependents per week. These results suggest that the intervention effectively encouraged participants to reallocate their time and focus more intensively on their entrepreneurial activities, potentially enhancing their business engagement.<sup>19</sup>

Overall, both the individual consulting and Peer Work Groups treatments showed positive effects on business outcomes, but their impacts vary across different dimensions. Both approaches led to significant increases in annual sales and profits. In terms of empowerment, neither approach produced significant improvements in shared household responsibilities, business decision-making, or pro-gender attitudes. However, as expected, PWG fostered stronger business and work-related networks compared to IC, which appears to have had an isolating effect. When examining business practices, group consulting (PWG) stands out, significantly improving overall practices, particularly in financial planning, whereas IC shows effects only in marketing practices. The significant difference in financial planning improvements between the two approaches further highlights the effectiveness of group-based support in strengthening key business skills. Taken together, these findings suggest that while both models contribute to business growth, PWG is particularly effective in enhancing networking and improving structured business practices.

### 5.3 Heterogeneous treatment effects

We begin by assessing the presence of treatment effect heterogeneity within each treatment arm in terms of profits, an outcome where both individual and group consulting had a positive impact. First, we assess the performance of the machine learning methods using two criteria: the best linear predictor (BLP) and the best group average treatment effects (GATES).<sup>20</sup> We find that elastic net consistently outperforms all other methods. As shown in [Table H1](#), it maximizes both performance metrics across treatment arms. Based on this evidence, we focus exclusively on elastic net in the analysis.

The results of Regression (3), presented in [Table 8](#), reveal a statistically significant heterogeneity coefficient for IC in profits (0.487, p-value = 0.012), indicating variation in treatment effects across individuals. Interestingly, no significant heterogeneity is detected in PWG.<sup>21</sup> This lack of heterogeneity in PWG may arise from the fact that treatment effects are primarily driven by group-level characteristics rather than individual-level variation. Specifically, the composition of the group may play a critical role in determining the overall performance of the group. We explore whether this is the case in [Section 5.5](#).

Next, we estimate the GATES values, with the results detailed in [Figure 2](#). We report the effects for the top 25% (most affected) and bottom 25% (least affected) groups in terms of the

<sup>19</sup>We present results using Lee bounds and various imputation of attriters in [Appendix F](#), finding that results are robust to most of them. Results using treatment assignment as an instrument for take up are presented in [Appendix D](#).

<sup>20</sup>The performance metrics are defined as  $\Lambda = |\beta_2|^2 \text{Var}(S(Z))$  for BLP and  $\Lambda = \frac{1}{K} \sum_{k=1}^K \gamma_k^2$  for GATES, as proposed by Chernozhukov et al. [2023](#).

<sup>21</sup>We get similar heterogeneity results for total annual sales. Results are available upon request.

predicted treatment effects. In the case of individual consulting, the results indicate an average treatment effect (ATE) of \$5,806 (p-value = 0.006) in profits for the most affected groups and non-significant effects for the least affected groups. Additionally, we observe a statistically significant difference between the most and the least affected groups (\$ 8,614, pval = 0.02), indicating that certain types of businesses derived substantial benefits from personalized consulting. However, the majority of businesses experience little to no effect. As shown in [Table 8](#), we did not find significant effects for group-based consulting.

Classification analysis sheds light on which entrepreneurs were most likely to benefit from individual consulting. As shown in [Table 9](#), individual consulting was particularly effective for businesses that were larger at baseline and had stronger foundational practices. These businesses are, on average, characterized by higher employee counts, greater sales, higher profits, and greater productivity, despite having lower levels of assets. In terms of business practices, these firms had already implemented some key practices prior to the intervention. By contrast, businesses operated from the entrepreneur’s home tended to show more modest gains, underscoring the structural barriers that limit their capacity to improve. The effects are also larger for entrepreneurs for whom the business was their only job, who had higher independent income, and who worked fewer hours in dependent employment. Finally, regarding demographic characteristics, the group experiencing the largest effects consisted predominantly of women over the age of 40, who are less likely to have attained higher education and who tend to have fewer children in the household. These results suggest that lower educational attainment may increase responsiveness to the intervention, possibly because, despite already operating businesses with higher sales and productivity on average, these women still face information constraints that the program helps to alleviate, enabling further improvements.

In summary, the evidence indicates that IC disproportionately benefits entrepreneurs who are already relatively successful and have established, effective practices. Notably, even among these successful businesses, lower levels of education amplify the gains from mentoring, suggesting that despite their achievements, many still face gaps in knowledge or access to relevant information that mentoring can help bridge. Importantly, these findings imply that it is feasible to identify businesses constrained by information gaps versus those limited by operational factors, enabling more precise targeting of interventions to maximize their impact.

#### **5.4 Conditional Group Average Treatment Effects in IC**

Following Bryan et al. (2024), we compute Conditional Group Average Treatment Effects to examine the factors that drive the success of the most benefited businesses. Specifically, we classify businesses into groups based on their profits and analyze the average effects on additional business outcomes to better understand the mechanisms through which individual consulting generates its impacts. This approach allows us to explore how heterogeneous responses across business characteristics contribute to the observed variation in program effectiveness.

[Table 10](#) reveals that businesses in the top quartile of profits not only achieved substantial

profit gains but also significantly increased their adoption of marketing practices (0.270, p-value = 0.012). This suggests that the intervention may have helped these businesses strengthen their marketing strategies, potentially contributing to their improved financial results without necessarily requiring an expanded business scale.

### 5.5 Adoption of business practices in PWG: Group composition effects

since we find individual level heterogeneous effects for IC but not for PWG, and considering the group nature of the PWG intervention, in this section we consider whether the group composition has an impact. Exploring the impacts of a group composition will also shed light on whether peer pressure and support can replace some mechanisms behind the strong effects often found for individual consulting or monitoring.

In focus groups conducted in parallel to the impact evaluation, PWG participants identified the motivation of seeing participants overcoming similar issues to what they faced, as well as the companionship the group provided among women with similar entrepreneurship activities, as benefits of the group setting. Knowing other female entrepreneurs provided them with knowledge related to new ways to sell and promote their business, events and other trainings, and different ways to organize their work. On the other hand, they noted that the heterogeneity of participants required the trainer to focus on participants with less experience, negatively affecting the experience of other participants.<sup>22</sup>

There are three mechanisms through which the group composition can affect PWG outcomes. First, the group setting can allow entrepreneurs to find peers in the group interested in implementing similar business practices, fostering mutual motivation and learning. We call this mechanism shared learning.

Another mechanism is knowledge transfer, where an entrepreneur learns from a group member by adopting and applying a business practice that the member has already implemented.

Finally, peer pressure within the group can drive adoption: entrepreneurs observing others implementing recommended practices may feel compelled to identify and integrate relevant practices into their own firms. Notably, this peer pressure effect does not require all group members to adopt the same practice.

Section 5.1 shows that entrepreneurs in the PWG treatment arm exhibited positive and significant effects on sales and profits (Table 5). It also shows positive effects on the adoption of some key recommended business practices underlined by the facilitators, in particular those associated with financial planning (Table 7).

To analyze whether any of these three mechanisms were present in the participants' learning and implementation of business practices, we follow Iacovone et al. (2022), and use Equation (2):

$$\Delta P_{jig} = \beta_0 + \beta_1 \overline{\Delta P_{j(-i)g}} + \beta_2 \overline{\Delta P_{(-j)(-i)g}} + \beta_3 \max_{(-i)g} P_{j(-i)g}^0 + \epsilon_{jig} \quad (2)$$

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<sup>22</sup>The relevant heterogeneity was not age, level of education, or socioeconomic level, but how up to date the participants were on professional digital tools, use of social media etc.

where  $\Delta P_{jig}$  is the change in the business practice index  $j$  for individual  $i$  of group  $g$ ,  $\overline{\Delta P_{j(-i)g}}$  is the mean change in index  $j$  for the other members in  $i$ 's group,  $\overline{\Delta P_{(-j)(-i)g}}$  denotes the mean change in any other practices other than  $j$  within the same group,  $\max_{(-i)g} P_{j(-i)g}^0$  is the maximum level of the index  $j$  at baseline among the other members of  $i$ 's group, and  $\epsilon_{jig}$  is the error term. Notice that the specification includes as many observations per firm as the number of indices we have (marketing, inventory, cost and record keeping, and financial planning), which requires the error term to be clustered at the firm level<sup>23</sup>. Under such a specification,  $\beta_1$  tests whether individuals benefit from shared learning within the group and  $\beta_3$  tests whether they are learning from other group members who were already applying business practice  $j$  at baseline. In turn, we interpret  $\beta_2$  as an indication that the adoption of practice  $j$  is connected to the group adopting some of the other recommended practices, which we interpret as indicating that the peer pressure mechanism affects the practice of entrepreneur  $i$ .

Table 11 presents the results of running the regression in (2), plus some other related specifications. Column (1) reports the results of the regression that only includes the adjustments of other group members in the same practice. In turn, Column (2) adds the adjustments of other group members in the other practices. Column (3) presents the full results of the specification in Expression (2). Our estimates indicate that the effect of the other group members adopting practice  $j$  is positive and significant at the 0.1 level of confidence, consistent with the hypothesis of shared learning. On the other hand, we also find the maximum level of use of business practice  $j$  in the group negatively affects the adoption of practice  $j$  by entrepreneur  $i$ , which undermines the importance of the knowledge transfer mechanism. Our estimate of  $\beta_2$  is positive but not significant, which we interpret as lack of evidence of peer pressure. Although this evidence is only descriptive, we interpret these results as indicating that shared learning seems to be more relevant among the groups formed for this study, compared to the peer pressure and knowledge transfer mechanisms.

## 6 Conclusions

This study aims to identify the best methods for transferring management skills to small-scale entrepreneurs. Recent evidence suggests that micro and small firms in developing countries often face constraints due to limited management skills, and that one-to-one consulting can help them overcome these limitations even several years after the intervention. However, the policy challenge is that such interventions are costly and difficult to scale up without entrepreneurs assuming part of the cost. Therefore, we need interventions that can reduce financial constraints and the uncertainty about the quality of consulting.

We present the results of an experiment in which we randomly assigned free consulting services to established female SME owners or managers in urban Lima and Arequipa, the two largest cities in Peru. Eligible entrepreneurs were assigned to either the control group or to one of two treatment groups. Both treatment groups received 24 hours of consulting over three

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<sup>23</sup>Iacovone et al. (2022) runs one regression including all business practices per firm as observations.

months— one through individual consulting and the other in groups of 7. The group treatment costs about half as much as the individual treatment. Our key question was whether the group consulting treatment could generate effects similar to those obtained with one-to-one consulting, and whether peer pressure and support mechanisms could compensate for the reduced consulting time each treated entrepreneur received.

On average, we find that both individual and group consulting had a positive effect in sales and profits, with no statistically significant difference between the two. The effects are sizable: sales increased by 32% and profits by 24%. Given the lower cost of group consulting, it emerges as a cost-effective alternative.

Furthermore, we identified group and individual characteristics that affect the effectiveness of both treatments. Group consulting had a stronger impact on business networks compared to individual consulting and led to improvements in business practices. Analyzing the effects of group composition, we find evidence consistent with shared learning. Interestingly, however, we observe a negative impact when some participants were significantly more advanced than others.

On the other hand, we find individual-level heterogeneous effects for individual consulting. More productive firms— those with more employees and better initial business practices— experienced larger effects. Interestingly, individual consulting also had a greater impact on firms with stronger networks at baseline. Consistently, we find that firm with individual consulting that had larger increases in profits also had higher increases in their business practices, highlighting the expected mechanism.

Overall, our results suggest that individual consulting is particularly effective for larger firms with well-established networks at baseline, which can inform participant selection for similar programs. Group consulting also proves to be an effective strategy, fostering improved business practices through peer learning. Participant selection should therefore prioritize assigning top-performing firms to individual consulting, while directing other firms to group consulting. For the group treatment, it is important to carefully manage group heterogeneity to avoid potential negative effects— specifically, high-performing firms at baseline should be placed in individual consulting rather than mixed groups.

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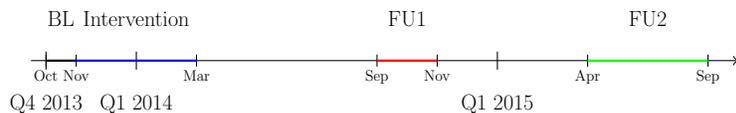
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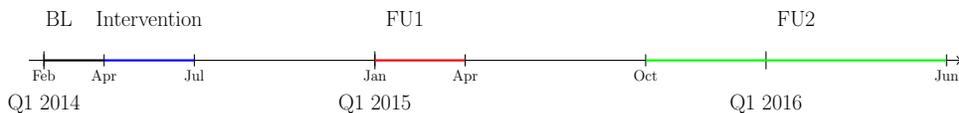
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## 7 Tables and Figures

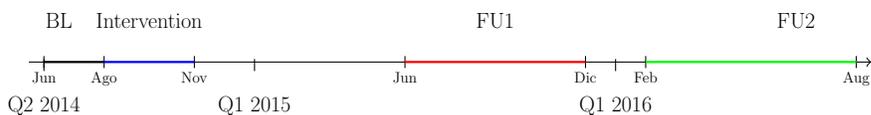
### Cohort 1



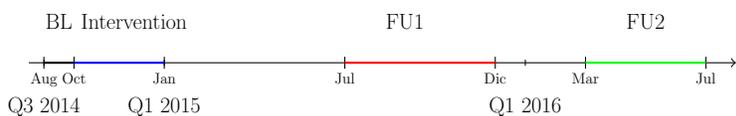
### Cohort 2



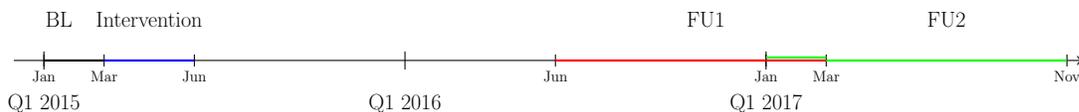
### Cohort 3



### Cohort 4



### Cohort 5



### Cohort 6

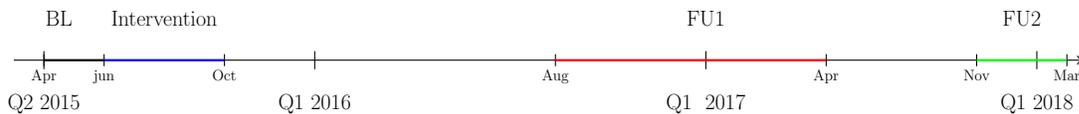


Figure 1: Timeline by Cohort

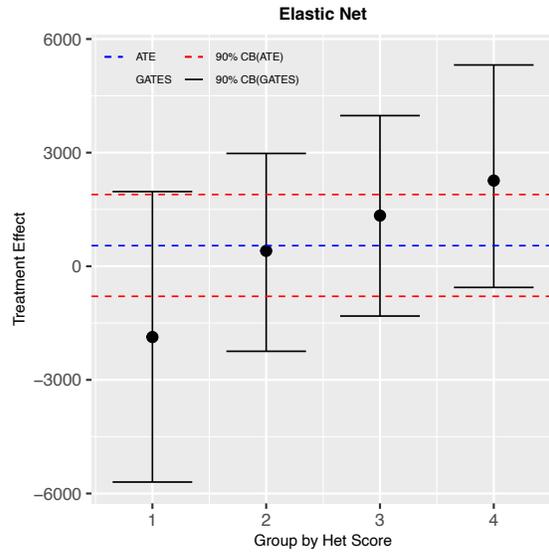
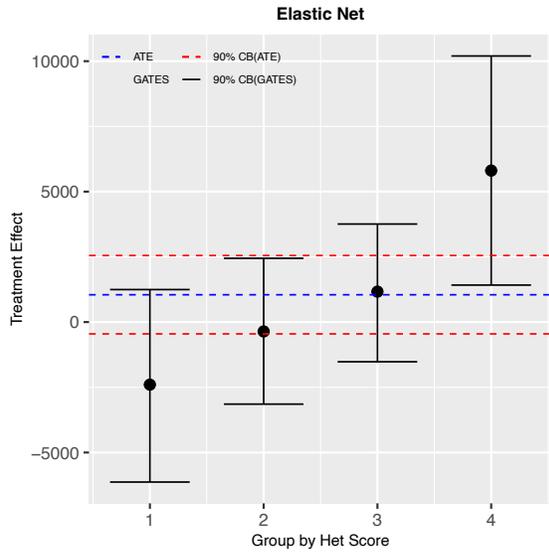


Figure 2: Panel A: Individual Consulting

Panel B: Peer Working Group

*Note: Heterogeneous Treatment Effects for Profits.*

Table 1: Characteristics of the sample according to department

Cohort	Arequipa	Lima & Callao	Total
Cohort 1	0	180	180
Cohort 2	0	180	180
Cohort 3	0	180	180
Cohort 4	180	0	180
Cohort 5	0	180	180
Cohort 6	0	198	198
Total	180	918	1098

Note: Author's calculations

Table 2: Surveys Data

	Control	IC	PWG	Total
Assigned	364	365	369	1098
Baseline	352	354	350	1056
0 FU surveys	73	49	59	181
1 FU survey	121	104	110	335
2 FU surveys	170	212	200	582

Note: Author's calculations

Table 3: Balance on baseline

	Obs (1)	Control (2)	IC (3)	PWG (4)	P-val. IC-PWG (5)
<b>Panel A: Firm Characteristics</b>					
Total annual sales (dollars <sup>1</sup> )	749	38113.5 (3436.7)	-4938.9 (3772.3)	-6058.3 (3661.3)	0.772
Total annual profits (dollars)	725	11491.9 (747.56)	-1153.6 (1291.5)	-1796.4* (993.91)	0.573
Assets Value (dollars)	872	10893.8 (1424.1)	1368.4 (1927.9)	-1573.5 (1313.7)	0.115
Total Factor Productivity	671	-0.081 (0.082)	0.034 (0.085)	0.103 (0.074)	0.417
Number of employees	815	3.337 (0.212)	-0.140 (0.234)	-0.115 (0.223)	0.888
Business age (years)	899	8.070 (0.315)	-0.331 (0.194)	-0.998*** (0.229)	0.020**
Number of months in activity (business)	906	11.736 (0.068)	0.225*** (0.063)	0.113 (0.070)	0.065*
<b>Panel B: Business Practices</b>					
Business practices index	906	0.000 (0.094)	0.049 (0.073)	-0.034 (0.063)	0.348
Marketing index	906	-0.000 (0.115)	0.032 (0.090)	0.050 (0.080)	0.864
Record-keeping index	906	0.000 (0.060)	0.039 (0.063)	-0.042 (0.050)	0.228
Costs index	906	-0.000 (0.092)	0.037 (0.041)	-0.018 (0.046)	0.320
Financial Planning index	906	-0.000 (0.060)	0.050 (0.068)	-0.084 (0.074)	0.131
<b>Panel C: Individual Characteristics</b>					
Married or cohabiting	906	0.611 (0.038)	-0.109*** (0.031)	-0.056 (0.036)	0.071*
Age (years)	906	41.510 (0.890)	-0.131 (0.505)	-1.201** (0.542)	0.008***
Manages the business alone	906	0.771 (0.024)	0.046 (0.032)	0.004 (0.028)	0.130
Hours dedicated to domestic chores	905	12.712 (0.716)	-0.414 (0.569)	-1.321* (0.643)	0.221
Business is the only job	906	0.844 (0.039)	-0.023 (0.034)	-0.038 (0.032)	0.678
Monthly independent income (dollars)	895	1257.7 (164.49)	10.566 (150.38)	206.85 (187.09)	0.167
Hours worked as independent in a week	905	48.875 (2.494)	0.777 (1.375)	1.172 (1.195)	0.705

Notes at Table 3: Balance on baseline (con't)

Table 3 (con't): Balance on baseline

	Obs (1)	Control (2)	IC (3)	PWG (4)	P-val. IC-PWG (5)
<b>Panel C (con't): Individual Characteristics</b>					
Monthly wage (dollars)	906	37.102 (8.945)	9.557 (14.790)	20.268 (13.015)	0.454
Hours worked as dependent in a week	906	2.125 (0.513)	0.043 (0.578)	0.724 (0.632)	0.315
Independent as principal job	895	0.947 (0.016)	-0.011 (0.017)	-0.008 (0.017)	0.861
Assigns herself a fixed salary	906	0.340 (0.043)	0.027 (0.031)	-0.052* (0.028)	0.006***
Has a budget	903	0.101 (0.022)	-0.010 (0.018)	-0.004 (0.015)	0.704
House is operation site	906	0.531 (0.066)	-0.043 (0.032)	-0.062 (0.039)	0.528
Number of kids	905	0.694 (0.062)	0.054 (0.072)	0.027 (0.072)	0.665
Percentage of relatives with income	905	0.651 (0.017)	0.004 (0.017)	-0.001 (0.013)	0.765
<b>Panel D: Empowerment &amp; Networks</b>					
Index: Takes Business Decisions	906	-0.000 (0.136)	0.125** (0.052)	-0.001 (0.056)	0.010***
Index: Pro-gender Attitudes	821	0.000 (0.093)	-0.044 (0.061)	0.029 (0.058)	0.252
Index: Couple shares domestic chores	501	0.000 (0.058)	0.064 (0.067)	0.041 (0.100)	0.830
Network index	906	-0.000 (0.062)	-0.005 (0.056)	-0.079 (0.079)	0.258
Business network index	906	0.000 (0.054)	0.112* (0.063)	-0.014 (0.075)	0.038**
Index of participation in society	906	0.000 (0.066)	-0.131** (0.054)	-0.120 (0.074)	0.859

Note: <sup>1</sup>All amounts in dollars were calculated using the exchange rate of June 2013. <sup>2</sup>Productivity was created using a Cobb-Douglas production function. In this model, sales serve as the dependent variable, representing output, while employees and assets are the independent variables, representing inputs. The productivity measure was derived as the residual from this function, representing the portion of output not explained by the inputs and estimated coefficients. This residual captures the efficiency or effectiveness of the inputs in generating output. ‡

Sample size varies because of missing values. The balance is calculated on baseline. Column [2] is the mean of the variable for the control group. Column [3] and [4] are the difference in the mean of the variable in relation to the reference group for each treatment group. Column [3] and [4] includes strata effects of cohort-sector. The errors are clustered at the level of cohort-treatment of basic training. Column [5] is the difference between Column [3] and [4]. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%.

Table 4: Take-up prediction

	Take-up			
	Start program		> 50 % sessions	
	IM	PWG	IM	PWG
	(1)	(2)	(3)	(4)
Age (years)	0.0589 (0.1135)	0.5672** (0.2184)	0.1595 (0.1284)	0.7008 (0.3535)
Married or cohabiting	-5.8541*** (1.2980)	4.0431 (4.2117)	-4.5328 (2.4818)	7.0404 (5.8513)
Number of months in activity (business)	2.5548** (0.6818)	0.6326 (0.7178)	2.6491** (0.6862)	0.6993 (1.0654)
Hours dedicated to domestic chores	0.1705 (0.1115)	-0.0836 (0.2260)	0.0241 (0.1728)	-0.2544* (0.1103)
Manages the business alone	-1.7458 (1.7314)	1.4845 (4.1285)	1.1788 (3.7939)	-0.4615 (4.8031)
Business is the only job	0.5316 (1.7663)	3.2129 (6.2705)	-1.9746 (2.2380)	-1.7458 (9.5202)
Business age (years)	0.1212 (0.0652)	-0.5522 ** (0.1688)	-0.1268 (0.1734)	-0.2157 (0.3857)
N	365	369	365	369
Take-up (%)	93.42	83.74	89.32	68.02

Table 5: ITT Effects: Business results

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC-PWG (5)	Any Consult- ing (6)
Total annual sales (dollars <sup>1</sup> )	1892	38113.5 (4071.7)	11909.8** †† (5263.3)	12163.0** †† (4771.2)	0.959	12029.5*** ††† (4372.1)
Total annual profits (dollars)	1818	11491.9 (1018.0)	2883.2* † (1493.7)	2576.5** † (1310.9)	0.808	2734.0** †† (1256.7)
Assets Value (dollars)	2261	10893.8 (1729.5)	-2134.4 (2707.8)	263.85 (2604.1)	0.299	-941.79 (2392.2)
Total Factor Productivity	1710	-0.081 (0.066)	0.072 (0.092)	-0.045 (0.089)	0.168	0.013 (0.080)
Number of employees	2159	3.337 (0.221)	0.193 (0.237)	0.422 (0.263)	0.320	0.307 (0.222)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the Individual level. Stars denote significance levels (\* 10%; \*\* 5%; \*\*\* 1%) based on unadjusted p-values. Daggers denote significance levels († 10%, †† 5%, ††† 1%) based on Romano Wolf p-values (for columns [3],[4] and [6]). Romano Wolf multiple hypothesis testing calculations jointly include 5 regressions with the variables shown as outcomes for each regression.

Table 6: ITT Effects: Empowerment and Networks

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Any Con- sulting (6)
<b>PANEL A: Empowerment</b>						
Index: Takes Business Decisions	2393	0.000 (0.136)	-0.095 (0.168)	0.019 (0.178)	0.494	-0.039 (0.153)
Index: Pro-gender Attitudes	2188	0.000 (0.093)	0.092 (0.117)	-0.038 (0.111)	0.216	0.028 (0.104)
Index: Couple shares domestic chores	1343	0.000 (0.058)	-0.035 (0.199)	-0.027 (0.199)	0.968	-0.031 (0.174)
<b>PANEL B: Networks</b>						
Network index	2404	0.000 (0.073)	0.001 (0.095)	0.127 (0.092)	0.065*	0.063 (0.090)
Business network index	2404	0.000 (0.067)	-0.019 (0.072)	0.061 (0.075)	0.045**	0.021 (0.072)
Index of participation in society	2403	0.000 (0.066)	0.069 (0.095)	0.180 (0.115)	0.277	0.124 (0.095)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the Individual level. Stars denote significance levels (\* 10%; \*\* 5%; \*\*\* 1%) based on unadjusted p-values. Daggers denote significance levels († 10%, †† 5%, ††† 1%) based on Romano Wolf p-values (for columns [3],[4] and [6]). Romano Wolf multiple hypothesis testing calculations jointly include regressions within each panel with the variables shown as outcomes for each regression.

Table 7: ITT Effects: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Any Con- sulting (6)
<b>PANEL A: Indexes</b>						
Business practices index	2405	0.000 (0.059)	0.060 (0.081)	0.172* <sub>†</sub> (0.087)	0.189	0.115 (0.073)
Marketing index	2405	-0.000 (0.059)	0.151* <sub>†</sub> (0.079)	0.080 (0.080)	0.348	0.116* (0.070)
Record-keeping index	2404	0.000 (0.059)	-0.008 (0.090)	0.146 (0.093)	0.100	0.068 (0.079)
Costs index	2404	-0.000 (0.059)	-0.025 (0.076)	0.070 (0.077)	0.215	0.022 (0.066)
Financial Planning index	2404	-0.000 (0.059)	0.039 (0.104)	0.232* <sub>†</sub> (0.121)	0.085*	0.134 (0.098)
<b>PANEL B: Time distribution</b>						
Business is the only job	2394	0.673 (0.025)	0.035 (0.037)	0.088* <sub>††</sub> (0.037)	0.152	0.061* <sub>††</sub> (0.033)
Hours worked as dependent in a week	2390	2.125 (0.503)	-0.626 (0.978)	-1.715* <sub>†</sub> (1.011)	0.234	-1.16 (0.884)
Independent as principal job	2313	0.947 (0.013)	0.002 (0.029)	0.017 (0.029)	0.571	0.010 (0.025)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the Individual level. Stars denote significance levels (\* 10%; \*\* 5%; \*\*\* 1%) based on unadjusted p-values. Daggers denote significance levels († 10%, †† 5%, ††† 1%) based on Romano Wolf p-values (for columns [3],[4] and [6]). Romano Wolf multiple hypothesis testing calculations jointly include regressions within each panel with the variables shown as outcomes for each regression.

Table 8: Heterogeneity assessment

	IC (Elastic Net)		PWG (Elastic Net)	
	ATE	HET	ATE	HET
Total annual profits	1047 (-452.6,2551) [0.344]	0.487 (0.140,0.836) [0.012]	544.2 (-794.2,1894) [0.852]	0.336 (-0.041,0.703) [0.160]

Notes: Medians over 100 splits. 90% confidence interval in parenthesis. P-values for the hypothesis that the parameter is equal to zero in brackets.

Table 9: CLAN of Total Annual Profits

Panel A: Business results at baseline				Panel D: Entrepreneur characteristics at baseline			
	25% Most	25% Least	Diff		25% Most	25% Least	Diff
<b>Total annual sales (dollars)</b>	54,781 (47068,62443)	20,516 (12712,28315)	33,964 (22948,44998) [0.000]	<b>Higher education = 1</b>	0.233 (0.177,0.290)	0.571 (0.514,0.628)	-0.336 (-0.417,-0.255) [0.000]
<b>Total annual profits (dollars)</b>	15,533 (13626,17458)	6,355 (4402,8313)	9,246 (6561,11983) [0.000]	<b>Married or cohabiting</b>	0.621 (0.560,0.681)	0.486 (0.425,0.547)	0.134 (0.048,0.220) [0.005]
<b>Total assets</b>	8,014 (3135,12851)	23,772 (18896,28623)	-15,766 (-22618,-8877) [0.000]	<b>Entrepreneur Age (years)</b>	43.42 (42.08,44.73)	39.30 (37.97,40.62)	4.168 (2.262,5.997) [0.000]
<b>Total factor productivity</b>	0.411 (0.310,0.512)	-0.264 (-0.365,-0.163)	0.676 (0.531,0.819) [0.000]	Manages the business alone	0.727 (0.673,0.781)	0.762 (0.708,0.816)	-0.036 (-0.112,0.039) [0.697]
<b>Number of employees</b>	4.827 (4.362,5.301)	2.245 (1.772,2.720)	2.578 (1.918,3.247) [0.000]	Hours dedicated to domestic chores	12.98 (11.73,14.23)	11.53 (10.28,12.79)	1.448 (-0.328,3.222) [0.220]
<b>Panel B: Business and network index at baseline</b>				<b>Business is the only job</b>	0.945 (0.897,0.992)	0.585 (0.538,0.634)	0.356 (0.289,0.423) [0.000]
<b>Marketing index</b>	0.127 (0.003,0.251)	-0.159 (-0.284,-0.035)	0.281 (0.103,0.457) [0.004]	<b>Monthly independent income</b>	2668 (2339,2998)	742.0 (414.7,1071)	1926 (1461,2391) [0.000]
Record-keeping index	-0.006 (-0.132,0.120)	0.154 (0.028,0.281)	-0.164 (-0.344,0.014) [0.143]	Hours worked as independent in a week	49.04 (46.22,51.87)	51.26 (48.49,54.10)	-2.381 (-6.347,1.596) [0.478]
<b>Costs index</b>	0.326 (0.208,0.446)	-0.076 (-0.194,0.042)	0.413 (0.244,0.581) [0.000]	<b>Monthly dependent income</b>	19.25 (-7.462,45.86)	104.10 (77.57,130.1)	-85.36 (-123.3,-47.63) [0.000]
<b>Financial Planning index</b>	0.241 (0.123,0.360)	-0.029 (-0.144,0.090)	0.264 (0.095,0.430) [0.004]	<b>Hours worked as dependent in a week</b>	0.957 (-0.123,2.043)	4.348 (3.281,5.440)	-3.405 (-4.938,-1.888) [0.000]
Business network index	0.178 (0.040,0.317)	0.022 (-0.116,0.160)	0.159 (-0.037,0.359) [0.225]	Assigns herself a fixed salary	0.407 (0.347,0.467)	0.360 (0.300,0.420)	0.043 (-0.042,0.128) [0.636]
<b>Index of participation in society</b>	-0.133 (-0.248,-0.015)	0.050 (-0.068,0.168)	-0.178 (-0.345,-0.016) [0.064]	<b>Number of kids in the h.h</b>	0.676 (0.554,0.794)	0.960 (0.840,1.079)	-0.285 (-0.458,-0.113) [0.002]
<b>Panel C: Business characteristics at baseline</b>				<b>Percentage of relatives with income in the h.h</b>	0.659 (0.629,0.688)	0.597 (0.567,0.627)	0.063 (0.021,0.106) [0.007]
<b>Business age (years)</b>	8.921 (8.059,9.771)	7.703 (6.845,8.557)	1.244 (0.012,2.445) [0.096]	<b>Panel E: Empowerment index at baseline</b>			
<b>House is operation site</b>	0.387 (0.327,0.448)	0.577 (0.516,0.638)	-0.190 (-0.276,-0.104) [0.000]	<b>Index: Pro-gender Attitudes</b>	0.233 (0.119,0.351)	-0.186 (-0.300,-0.070)	0.423 (0.259,0.582) [0.000]
<b>Has a business budget</b>	0.069 (0.031,0.107)	0.146 (0.108,0.184)	-0.079 (-0.131,-0.024) [0.010]	Index: Takes Business Decisions	0.125 (0.005,0.245)	-0.034 (-0.155,0.085)	0.157 (-0.014,0.326) [0.143]

Notes: Medians over 100 splits. 90% confidence interval in parenthesis. P-values for the hypothesis that the parameter is equal to zero in brackets.

Table 10: Conditional Group Average Treatment Effects (CGATES)

Variable	G1 (Least affected) (1)	G2 (2)	G3 (3)	G4 (Most affected) (4)
Total Sales	6574.690 (6331.790)	5175.190 (6255.780)	9226.570 (8298.610)	4097.330 (6702.750)
Total Assets	444.980 (3816.180)	-2020.060 (3076.990)	-5430.330 (3848.510)	3201.650 (3384.910)
Total factor productivity	0.120 (0.100)	0.010 (0.090)	0.110 (0.100)	-0.030 (0.100)
Number of Employees	-0.010 (0.340)	-0.220 (0.350)	-0.060 (0.380)	0.450 (0.400)
Marketing index	0.020 (0.110)	0.130 (0.130)	0.130 (0.110)	0.270 **† (0.120)
Inventory index	-0.060 (0.130)	-0.080 (0.140)	0.150 (0.130)	0.140 (0.140)
Cost index	-0.150 (0.130)	0.020 (0.120)	0.000 (0.110)	0.150 (0.140)
Financial Planning	0.060 (0.180)	0.020 (0.180)	0.170 (0.130)	0.000 (0.190)

Note: This table report results from a two-step process. First, using CATE algorithm we predict individual treatment effects on business profits. Second, we report the coefficients from a regression of the outcome variable (row) on treatment status interacted with indicator variables associated with which quartile of predicted individual treatment effects (columns) the borrower was assigned to in the first step. Column (1) reports the ITT effect for the individuals who are in the bottom group while Column (4) reports the ITT effect for being in the top group. Stars denote significance levels (\* 10%; \*\* 5%; \*\*\* 1%) based on unadjusted p-values. Daggers denote significance levels († 10%, †† 5%, ††† 1%) based on Romano Wolf p-values (for columns [3],[4] and [6]). Romano Wolf multiple hypothesis testing calculations jointly include regressions within each panel with the variables (4) shown as outcomes for each regression.

Table 11: Business practices take up: Group composition effects

	$\Delta\%$ Business practice			
	(1)	(2)	(3)	(4)
Mean change in practice for other group members	0.116 (0.074)	0.122 (0.079)	0.132* (0.078)	0.130* (0.077)
Mean change in other practices		0.062 (0.061)	0.059 (0.062)	0.059 (0.062)
Maximum baseline level of practice for other group members			-0.070* (0.039)	-0.079* (0.041)
N	2,001	2,001	2,001	2,001
Control Mean	0.14	0.14	0.14	0.14

Notes: The data used in this table comes from a panel of 4 BP indices for firm assigned to PWG (see table A2 in Appendix A for details). Error terms for each regression (column) are clustered at the level of the firm.

## A Index construction

In the paper, we refer to two types of indices: the **Network Index** and the **Business Practices Index**.

All indices were constructed following a two-step process:

### 1. Step 1: Standardization of individual questions.

- Each question included in the index was standardized to have a 0 mean and a standard deviation of 1.
- This ensures that all variables are on the same scale, regardless of their original units.

### 2. Step 2: Averaging and standardizing the resulting score.

- The standardized questions were averaged to create a composite score for the index.
- The composite score was then standardized to facilitate interpretation and comparison.

[Table A1](#) provides a detailed breakdown of the variables comprising the Network Index. Similarly, [Table A2](#) outlines the variables that constitute the Business Practices Index. Tables [A3](#), [A4](#), [A5](#), and [A6](#) present the impact of the treatment on each variable within the **Market Research & Advertising**, **Inventory Management**, **Costs & Record Keeping**, and **Financial Planning Practices** indices, respectively.

Table A1: Network index Questions

Section	Question
Business Network Index	BN1. Chamber of Commerce: Refers to membership in organizations like a Chamber of Commerce, an industrial society, or a business association.
	BN2. Company Subcontracting: Refers to the practice of outsourcing tasks or services to external companies as part of business operations.
	BN3. Business Leaders Meetings: Refers to the frequency of meetings held with business leaders from other companies.
	BN4. Hiring Recommendations: Refers to the number of contacts available for obtaining recommendations when needing a new employee.
	BN5. Business Advice Contacts: Refers to the number of people known who can be consulted for advice regarding the company.
	BN6. Community Support: Refers to the number of non-employee family members available to provide assistance with the business when needed.
	BN7. Professional Advice: Refers to the number of individuals from whom advice has been sought in the professional field.
	BN8. Business Advice: Refers to the number of individuals from whom advice has been sought in the business field.
	BN9. Formal Business Group Membership: Indicates whether you are an active member of a formal trade group, business, or professional association.
Society Participation	SP1. Self-Help Group Membership: Indicates whether you are an active member of a self-help group unrelated to credit.
	SP1. Personal Advice: Refers to the number of individuals from whom advice has been sought in personal matters.
	SP3. Microfinance Group Membership: Indicates whether you are an active member of a microfinance group.
	SP4. Informal Savings or Loan Groups: Indicates whether you are an active member of informal savings or loan groups.
	SP5. Cultural or Sports Group Membership: Indicates whether you are an active member of a theater, music, dance, or sports club.
	SP6. Credit Union Membership: Indicates whether you are an active member of a credit union.
	SP7. Religious Group Membership: Indicates whether you are an active member of a religious group.
	SP8. Neighborhood Committee Membership: Indicates whether you are an active member of a neighborhood committee.
	SP9. Political Group Membership: Indicates whether you are an active member of a political party or another political group.
	SP10. NGO Membership: Indicates whether you are an active member of an NGO (volunteer work).
	SP11. Women's Group Membership: Indicates whether you are an active member of a women's group.

Table A2: Business practices questions

Section	Question
Marketing	M1. Market research: Engages in activities such as visiting competitors, gathering customer feedback, consulting former clients, and inquiring about market innovations.
	M2. Pricing strategy: Sets prices just below round numbers (e.g., \$999 instead of \$1,000).
	M3. Customer attraction strategies: Offers gifts, discounts, "2 for 1" deals, social events, and loyalty cards.
	M4. Digital marketing: Utilizes media channels such as Facebook, Twitter, blogs, Google Ads, and email.
	M5. Pre-launch activities: Conducts research, gathers feedback, releases samples, and consults employees before launching.
	M6. Customer satisfaction measurement: Measures satisfaction through inquiries, sales tracking, and surveys.
	M7. Staff training for cross-selling: Trains staff to cross-sell complementary products.
	M8. Branding practices: Uses an unregistered logo, defined colors and fonts, and a brand slogan.
	M9. Trade fair participation: Participates in domestic or international trade fairs.
Inventory management	I1. Inventory management: Maintains inventory for supplies.
	I2. Product inventory: Maintains inventory for sold products.
	I3. Inventory analysis capabilities: Allows for assessments such as product turnover, minimum stock levels, expiration dates, and planned execution.
	I4. Physical inventory checks: Conducts physical inventory checks.
	I5. Stockout frequency: Experiences stockouts of raw materials or goods.
	I6. Price negotiation: Negotiates lower prices with suppliers within the last 12 months.
	I7. Payment extension negotiation: Negotiates payment extensions with suppliers within the last 12 months.
	I8. Supplier comparison: Compares prices and quality of inputs with other suppliers within the last 12 months.
Costs & Record-Keeping	C1. Sales and purchase records: Records sales and purchases using accounting records.
	C2. Cost analysis: Analyzes costs, margins, best-selling products, cash flow, sales variations, and profit margins.
	C3. Fixed expenses budget: Tracks rent, electricity, maintenance, transportation, advertising, and other fixed expenses.
	C4. Salary records: Maintains a record of personal salary.
	C5. Withdrawal records: Records withdrawals of products or services.
	C6. Employee salary records: Records employee salaries using accounting books or a computerized system.
	C7. Accountant services: Engages an accountant or utilizes accounting services.
Financial Planning	PF1. P&L statement preparation: Prepares P&L statement.
	PF2. Cash flow statement preparation: Prepares cash flow statement.
	PF3. General accounting statement preparation: Prepares general accounting statement.
	PF4. Financial analysis tools: Uses tools such as sales tracking, supply purchases, employee inquiries, and accountant consultation.
	PF5. Performance review frequency: Regularly checks the company's performance and establishes strategies for improvement.
	PF6. Numerical goal setting: Sets numerical goals for the business.
	PF7. Goal performance comparison: Compares actual performance with established goals regularly.
	PF8. Work plans for objectives: Develops specific plans detailing activities, timelines, and responsibilities.
	PF9. Annual budget preparation: Prepares a budget for the upcoming year's expenses.

Table A3: Market Research &amp; Advertising Practices

	M1	M2	M3	M4	M5	M6	M7	M8	M9
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Assigned to IM	-0.0256 (0.1088)	0.1568* (0.0898)	0.0597 (0.1360)	0.1185 (0.0875)	0.0322 (0.0846)	0.1572 (0.1348)	0.0159 (0.1305)	0.0650 (0.1897)	0.1407** (0.0610)
Assigned to PWG	0.0689 (0.1124)	0.1376 (0.0796)	-0.0780 (0.1278)	0.0990 (0.1083)	0.0938 (0.1126)	0.0070 (0.1332)	0.0307 (0.1213)	-0.0638 (0.2171)	0.1308* (0.0661)
N	2,404	2,404	2,404	2,405	2,404	2,404	2,206	2,404	2,404
Control Mean	-0.00	-0.00	-0.00	0.00	0.00	-0.00	-0.00	0.00	0.00
P-value:IM=PWG	0.37	0.75	0.32	0.86	0.53	0.25	0.88	0.49	0.90

Table A4: Inventory management practices

	I1	I2	I3	I4	I5	I6	I7	I8
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Assigned to IM	-0.0164 (0.0933)	0.0122 (0.1023)	0.0386 (0.0916)	0.1170 (0.0739)	-0.0731 (0.0991)	-0.0433 (0.0841)	-0.0324 (0.0701)	-0.0450 (0.1105)
Assigned to PWG	0.1029 (0.0963)	0.0806 (0.0953)	0.1158* (0.0644)	0.1191 (0.1067)	-0.0130 (0.1186)	0.0194 (0.0636)	0.0019 (0.0830)	0.1012 (0.1350)
N	2,404	2,404	2,404	2,388	2,362	2,331	2,336	2,404
Control Mean	0.00	0.00	0.00	-0.00	0.00	-0.00	-0.00	-0.00
P-value:IM=PWG	0.29	0.56	0.38	0.98	0.46	0.53	0.67	0.16

Table A5: Costs &amp; record-keeping practices

	C1	C2	C3	C4	C5	C6	C7
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Assigned to IM	-0.1124 (0.0971)	-0.0159 (0.0956)	0.0370 (0.1261)	0.0439 (0.1239)	-0.0404 (0.1257)	0.0221 (0.1240)	-0.0379 (0.0454)
Assigned to PWG	-0.1660 (0.1110)	0.0658 (0.1301)	0.0146 (0.0981)	0.2179** (0.0954)	-0.0262 (0.1318)	0.1648** (0.0652)	0.0148 (0.0824)
N	2,404	2,404	2,404	2,404	2,404	2,404	2,404
Control Mean	-0.00	-0.00	-0.00	0.00	-0.00	0.00	0.00
P-value:IM=PWG	0.50	0.54	0.81	0.22	0.81	0.27	0.51

Table A6: Financial planning practices

	FP1	FP2	FP3	FP4	FP5	FP6	FP7	FP8	FP9
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Assigned to IM	0.1050 (0.1103)	0.0653 (0.1018)	0.0705 (0.0783)	-0.1751 (0.1136)	0.0325 (0.1048)	-0.0569 (0.0638)	0.1823 (0.2473)	0.0697 (0.1532)	-0.0479 (0.0890)
Assigned to PWG	0.2817** (0.1118)	0.1201 (0.0762)	0.0079 (0.0984)	-0.0867 (0.1000)	0.1810 (0.1349)	-0.0000 (0.0910)	0.7322 (0.5284)	0.0082 (0.1285)	0.0186 (0.1041)
N	2,365	2,365	2,366	2,404	2,365	2,253	2,367	2,404	2,404
Control Mean	0.00	-0.00	0.00	0.00	0.00	-0.00	-0.00	-0.00	-0.00
P-value:IM=PWG	0.10	0.55	0.57	0.44	0.15	0.57	0.31	0.57	0.55

## B Attrition by treatment

Table B1: Attrition by treatment

	Dependent variable: Complete information								
	Follow-up 1			Follow-up 2			SUNAT		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Individual Consulting	0.0637** (0.0302)	0.0565* (0.0295)	-0.0739 (0.1596)	0.1191*** (0.0364)	0.1320*** (0.0359)	0.2315 (0.1960)	-0.0026 (0.0158)	0.0023 (0.0158)	0.0779 (0.0863)
Peer Working Groups	0.0467 (0.0301)	0.0529* (0.0294)	-0.0607 (0.1360)	0.0689* (0.0363)	0.0896** (0.0357)	-0.1016 (0.1671)	-0.0075 (0.0157)	-0.0053 (0.0157)	0.0635 (0.0735)
N	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098	1,098
Control mean	0.75	0.75	0.75	0.52	0.52	0.52	0.96	0.96	0.96
P-val: ControlsXTreatment = 0			0.44			0.05			0.59
Controls	No	Yes	Yes	No	Yes	Yes	No	Yes	No
ControlsXTreatment	No	No	Yes	No	No	Yes	No	No	Yes

## C Tables with ANCOVA specification

Table C1: ITT Effects: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC-PWG (5)	Any Consulting (6)
<b>PANEL A: Indexes</b>						
Total annual sales (dollars <sup>1</sup> )	1143	36001.9 (1.000)	6448.5 (4161.9)	6039.2* (3596.6)	0.927	6242.3* <sub>‡</sub> (3180.7)
Total annual profits (dollars)	1093	10993.9 (1.000)	1570.5 (1127.2)	1162.8 (975.14)	0.697	1368.7 (915.80)
Assets Value (dollars)	1389	10677.1 (1.000)	-1117.1 (1936.6)	-697.29 (2057.5)	0.796	-907.84 (1824.8)
Productivity residual <sup>2</sup>	1039	-0.053 (1.000)	-0.012 (0.099)	-0.008 (0.079)	0.965	-0.010 (0.077)
Total employees	1344	3.102 (1.000)	0.055 (0.195)	0.339 (0.220)	0.173	0.196 (0.180)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table C2: ITT Effects: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Any Con- sulting (6)
<b>PANEL A: Indexes</b>						
Index: Takes Business Decisions	1487	0.006 (1.000)	0.043 (0.056)	0.025 (0.058)	0.726	0.034 (0.051)
Index: Pro-gender Attitudes	1367	0.031 (1.000)	0.084 (0.062)	-0.005 (0.066)	0.158	0.040 (0.056)
Index: Couple shares domestic chores	842	0.047 (1.000)	0.046 (0.088)	0.063 (0.085)	0.846	0.055 (0.075)
<b>PANEL B: Time distribution</b>						
Network index	1498	0.036 (1.000)	0.011 (0.065)	0.091 (0.070)	0.255	0.051 (0.058)
Business network index	1498	0.117 (1.000)	0.047 (0.069)	0.057 (0.073)	0.885	0.052 (0.061)
Index of participation in society	1497	-0.017 (1.000)	-0.010 (0.074)	0.104 (0.079)	0.125	0.046 (0.067)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table C3: ITT Effects: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Any Con- sulting (6)
<b>PANEL A: Indexes</b>						
Business practices index	1499	0.100 (1.000)	0.081 (0.069)	0.149** †† (0.072)	0.331	0.115* † (0.061)
Marketing index	1499	0.031 (1.000)	0.143** †† (0.059)	0.093 (0.060)	0.387	0.118** †† (0.052)
Record-keeping index	1498	0.062 (1.000)	0.024 (0.068)	0.122* † (0.070)	0.161	0.072 (0.060)
Costs index	1498	0.132 (1.000)	-0.002 (0.063)	0.049 (0.064)	0.431	0.024 (0.055)
Financial Planning index	1498	0.085 (1.000)	0.079 (0.086)	0.167* † (0.090)	0.276	0.122† (0.078)
<b>PANEL B: Time distribution</b>						
Business is the only job	1488	0.687 (1.000)	0.020 (0.031)	0.055* †† (0.030)	0.245	0.037†† (0.026)
Hours worked as dependent in a week	1484	3.476 (1.000)	-0.515 (0.899)	-1.061 (0.856)	0.489	-0.786 (0.784)
Independent as principal job	1418	0.905 (1.000)	-0.002 (0.025)	0.012 (0.023)	0.536	0.005 (0.021)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

## D Tables with IV specification

Table D1: LATE Effects: Business results

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC-PWG (5)	Pool (6)
<b>PANEL A: Business results</b>						
Total annual sales (dollars <sup>1</sup> )	2016	35498.9 (4361.4)	11503.2** (4455.0)	13523.0** (4934.6)	0.733	12391.8*** (3687.7)
Total annual profits (dollars)	1936	10970.9 (897.50)	3158.7* (1703.9)	2180.6 (2088.4)	0.611	2736.4 (1628.3)
Assets Value (dollars)	2404	11732.4 (2462.1)	-1564.8 (2919.8)	1371.8 (1832.2)	0.311	-291.46 (2087.3)
Productivity residual <sup>2</sup>	1821	-0.053 (0.096)	0.049 (0.096)	-0.041 (0.113)	0.490	0.009 (0.084)
Total employees	2295	3.063 (0.247)	0.080 (0.266)	0.444** (0.210)	0.217	0.241 (0.202)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table D2: LATE Effects: Empowerment and Networks

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Pool (6)
<b>PANEL A: Empowerment</b>						
Index: Takes Business Decisions	2543	0.010 (0.071)	-0.121 (0.172)	0.002 (0.236)	0.565	-0.067 (0.174)
Index: Pro-gender Attitudes	2320	0.041 (0.048)	0.084 (0.125)	-0.057 (0.144)	0.272	0.022 (0.121)
Index: Couple shares domestic chores	1415	0.038 (0.064)	0.017 (0.226)	-0.012 (0.279)	0.906	0.003 (0.222)
<b>PANEL B: Networks</b>						
Network index	2554	0.084 (0.029)	-0.040 (0.136)	0.186 (0.159)	0.057*	0.058 (0.139)
Business network index	2554	0.161 (0.023)	-0.045 (0.109)	0.097 (0.139)	0.052*	0.016 (0.120)
Index of participation in society	2553	0.015 (0.046)	0.030 (0.105)	0.213 (0.161)	0.201	0.110 (0.116)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table D3: LATE Effects: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Pool (6)
<b>PANEL A: Business Indices</b>						
Business practices index	2555	0.083 (0.062)	0.045 (0.126)	0.291* (0.163)	0.091*	0.152 (0.130)
Marketing index	2555	0.030 (0.063)	0.136 (0.173)	0.145 (0.239)	0.959	0.140 (0.182)
Record-keeping index	2554	0.049 (0.053)	-0.022 (0.113)	0.212 (0.124)	0.107	0.080 (0.103)
Costs index	2554	0.123 (0.072)	-0.055 (0.128)	0.092 (0.136)	0.287	0.009 (0.115)
Financial Planning index	2554	0.043 (0.051)	0.049 (0.091)	0.430*** (0.119)	0.008***	0.215** (0.098)
<b>PANEL B: Time distribution</b>						
Business is the only job	2542	0.753 (0.033)	0.034 (0.054)	0.106 (0.067)	0.134	0.065 (0.056)
Hours worked as dependent in a week	2539	3.712 (0.531)	-0.512 (0.828)	-1.52 (1.255)	0.341	-0.951 (0.917)
Independent as principal job	2457	0.901 (0.012)	-0.005 (0.019)	0.009 (0.036)	0.668	0.001 (0.022)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

## E Tables using Lasso for control variables selection

Table E1: ITT Effects: Business results and number of employees

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC-PWG (5)	Pool (6)
<b>PANEL A: Business results</b>						
Total annual sales (dollars <sup>1</sup> )	2016	36593.3 (4144.8)	5470.3 (3627.9)	6182.0* (3512.6)	0.869	11352.2*** (3082.6) <sub>†††</sub>
Total annual profits (dollars)	1936	11350.9 (768.84)	950.68 (1371.5)	691.10 (1554.2)	0.823	2271.3 (1373.5)
Assets Value (dollars)	2404	12737.4 (2130.6)	-1265.7 (2561.4)	1249.7 (1419.0)	0.311	-62.42 (1744.5)
Productivity residual <sup>2</sup>	1821	-0.161 (0.079)	-0.065 (0.076)	-0.051 (0.076)	0.866	0.013 (0.066)
Total employees	2295	3.203 (0.231)	0.080 (0.211)	0.364 <sub>†</sub> *** (0.125)	0.173	0.243 (0.183)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table E2: ITT Effects: Empowerment and Networks

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Pool (6)
<b>PANEL A: Empowerment</b>						
Index: Takes Business Decisions	2543	0.000 (0.129)	-0.106 (0.162)	0.003 (0.180)	0.531	-0.053 (0.146)
Index: Pro-gender Attitudes	2320	-0.000 (0.089)	0.082 (0.117)	-0.053 (0.110)	0.210	0.020 (0.101)
Index: Couple shares domestic chores	1415	-0.000 (0.074)	0.031 (0.212)	-0.011 (0.209)	0.835	0.013 (0.180)
<b>PANEL B: Networks</b>						
Network index	2554	0.000 (0.061)	-0.002 (0.125)	0.169 (0.120)	0.069*	0.071 (0.111)
Business network index	2554	-0.000 (0.062)	-0.026 (0.100)	0.096 (0.101)	0.029**	0.039 (0.094)
Index of participation in society	2553	0.000 (0.062)	0.073 (0.094)	0.187 <sub>‡</sub> (0.123)	0.287	0.102 (0.094)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

Table E3: ITT Effects using controls selected by LASSO: Business indexes and time distribution

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC- PWG (5)	Pool (6)
<b>PANEL A: Indexes</b>						
Business practices index	2555	0.000 (0.096)	0.054 (0.095)	0.179 (0.108)	0.219	0.125 (0.106)
Marketing index	2555	-0.000 (0.119)	0.141 (0.147)	0.087 (0.164)	0.707	0.120 (0.148)
Record-keeping index	2554	-0.000 (0.064)	-0.014 (0.094)	0.141* (0.080)	0.129	0.065 (0.085)
Costs index	2554	0.000 (0.089)	-0.048 (0.110)	0.050 (0.093)	0.360	0.009 (0.096)
Financial Planning index	2554	0.000 (0.059)	0.057 (0.061)	0.259** ‡‡ (0.109)	0.057*	0.170* ‡ (0.088)
<b>PANEL B: Time distribution</b>						
Business is the only job	2542	0.829 (0.035)	0.034 (0.049)	0.078 (0.047)	0.223	0.053 (0.047)
Hours worked as dependent in a week	2539	2.912 (0.631)	-0.541 (0.531)	-1.394* (0.729)	0.178	-0.762 (0.782)
Independent as principal job	2457	0.930 (0.018)	0.000 (0.016)	0.014 (0.028)	0.631	0.001 (0.018)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

## F Lee Bounds

	Obs. (1)	Total annual sales (dollars <sup>1</sup> )			
		IC (2)	PWG (3)	IC-PWG (4)	Any Consulting (5)
(1) Baseline Specifications	1,892	11909.8** (5263.3)	12163.0** (4771.2)	0.959	12029.5*** (4372.1)
(2) Lee lower bound	1,774	6925.5* (3789.6)	5174.6 (3862.1)	0.370	6068.0 (3697.3)
(3) Lee upper bound	1,774	13033.8** (5621.5)	12139.4** (4968.6)	0.870	12565.0*** (4542.7)
(4) A1: strata average for attritors	1,910	11703.9** (5186.3)	11953.4** (4710.1)	0.960	11822.4*** (4292.2)
(5) A2: strata max for attritors	1,910	6980.4 (6354.4)	7142.1 (5984.2)	0.974	7054.6 (5653.3)
(6) A3: attritors are closed	1,910	12474.1** (5186.3)	12722.0*** (4706.4)	0.960	12592.0*** (4289.2)

Note: This table shows sensibility of Dependent variable : Total annual sales (dollars) to different attrition levels. Rows (2)-(3) present the bounding approach of Lee (2005) to construct upper and lower bounds for the treatment effects. Rows (4)-(6) present alternative assumptions to deal with attrition in control group. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

	Obs. (1)	Total annual profits (dollars)			
		IC (2)	PWG (3)	IC-PWG (4)	Any Consulting (5)
(1) Baseline Specifications	1,818	2883.2* (1493.7)	2576.5** (1310.9)	0.808	2734.0** (1256.7)
(2) Lee lower bound	1,726	825.8 (1184.7)	1605.1 (1167.6)	0.231	1219.0 (1129.8)
(3) Lee upper bound	1,726	3372.5** (1560.3)	2729.5** (1339.7)	0.637	3052.2** (1283.6)
(4) A1: strata average for attritors	1,834	2840.1* (1475.5)	2533.6** (1289.4)	0.808	2691.1** (1234.9)
(5) A2: strata max for attritors	1,834	2580.6 (1585.5)	2305.8 (1417.1)	0.827	2447.4 (1366.1)
(6) A3: attritors are closed	1,834	2921.2** (1487.8)	2605.1** (1302.7)	0.802	2767.4** (1249.0)

Note: This table shows sensibility of Dependent variable : Total annual profits (dollars) to different attrition levels. Rows (2)-(3) present the bounding approach of Lee (2005) to construct upper and lower bounds for the treatment effects. Rows (4)-(6) present alternative assumptions to deal with attrition in control group. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

	Obs. (1)	Marketing index			
		IC (2)	PWG (3)	IC-PWG (4)	Any Consulting (5)
(1) Baseline Specifications	2,405	0.2* (0.1)	0.1 (0.1)	0.348	0.1* (0.1)
(2) Lee lower bound	2,259	0.1* (0.1)	0.1 (0.1)	0.782	0.1** (0.1)
(3) Lee upper bound	2,259	0.1 (0.1)	0.0 (0.1)	0.826	0.1 (0.1)
(4) A1: strata average for attritors	2,405	0.2* (0.1)	0.1 (0.1)	0.348	0.1* (0.1)
(5) A2: strata max for attritors	2,405	0.2* (0.1)	0.1 (0.1)	0.348	0.1 (0.1)
(6) A3: attritors are closed	2,405	0.2* (0.1)	0.1 (0.1)	0.348	0.1* (0.1)

Note: This table shows sensibility of Dependent variable : Marketing index to different attrition levels. Rows (2)-(3) present the bounding approach of Lee (2005) to construct upper and lower bounds for the treatment effects. Rows (4)-(6) present alternative assumptions to deal with attrition in control group. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

	Obs. (1)	Financial Planning index			
		IC (2)	PWG (3)	IC-PWG (4)	Any Consulting (5)
(1) Baseline Specifications	2,404	0.0 (0.1)	0.2* (0.1)	0.085	0.1 (0.1)
(2) Lee lower bound	2,259	0.0 (0.1)	0.1 (0.1)	0.274	0.1 (0.1)
(3) Lee upper bound	2,259	-0.0 (0.1)	0.1 (0.1)	0.046	0.1 (0.1)
(4) A1: strata average for attritors	2,404	0.0 (0.1)	0.2* (0.1)	0.085	0.1 (0.1)
(5) A2: strata max for attritors	2,404	0.0 (0.1)	0.2* (0.1)	0.085	0.1 (0.1)
(6) A3: attritors are closed	2,404	0.0 (0.1)	0.2* (0.1)	0.085	0.1 (0.1)

Note: This table shows sensibility of Dependent variable : Financial Planning index to different attrition levels. Rows (2)-(3) present the bounding approach of Lee (2005) to construct upper and lower bounds for the treatment effects. Rows (4)-(6) present alternative assumptions to deal with attrition in control group. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \* significant at 10%, \*\* significant at 5%, \*\*\* significant at 1%

## G Tax records

We use administrative tax records from Peru’s national tax authority (SUNAT)<sup>24,25</sup> to measure formal employment and the tax status of participant firms over the 12-month period spanning September 2017 to August 2018. This corresponds to 24 to 45 months after the intervention, depending on the cohort. We successfully matched 90% of participants to the tax records (see Table G1, last row). We find positive but not statistically significant effects on the number of formal employees. In contrast, we detect no significant impacts on the likelihood that firms operate formally or engage in international trade (Table G2).

Table G1: Tax Data

	Control	IC	PWG	Total
Assigned	364	365	369	1098
Baseline	352	354	350	1056
SUNAT	322	336	327	985

Table G2: Results of intervention using Tax records

	Obs (1)	Control (2)	IC (3)	PWG (4)	IC-PWG (5)	Any Consulting (6)
Total (formal) Employees	985	0.857 (0.056)	0.398 (0.250)	0.078 (0.276)	0.375	0.240 (0.202)
Non-active business (Tax status)	985	0.208 (0.027)	0.014 (0.017)	-0.001 (0.021)	0.550	0.006 (0.015)
Has foreign trade activity	985	0.211 (0.032)	-0.001 (0.024)	-0.000 (0.027)	0.979	-0.000 (0.023)

Note: IC refers to the treatment group with Individual Consulting; PWG refers to Peer Working Groups. Column [2] is the mean of the dependent variable for the control group at baseline. Column [3] and [4] are the ITT impacts for IC and PWG respectively. Column [5] is the difference between IC and PWG. Column [6] is the ITT impact of the two treatment groups joined together. Amounts in dollars using the exchange rate of June 2013. All regressions include strata fixed effects (cohort and economic sector). Errors are clustered at the level of cohort-treatment. \*significant at 10 %, \*\* significant at 5 %, \*\*\* significant at 1 %.

<sup>24</sup>There is no evidence of differential attrition for the tax data; see Table B1(columns (7)-(9)).

<sup>25</sup>Firms were identified through SUNAT’s open online records using the entrepreneur’s Registro Único de Contribuyentes (RUC), which uniquely identifies each taxpayer’s economic activity. When the RUC was unavailable, firms were matched using the entrepreneur’s national identity number (Documento Nacional de Identidad, DNI). All participants were linked to a single firm in the tax records. The data cover the period from September 2017 to August 2018 and were retrieved at the end of the third quarter of 2018.

## H Machine Learning Assessment

Table H1: Performance of Machine Learning Estimators

	IC			PWG		
	Elastic Net	Neuronal Networks	Random Forest	Elastic Net	Neuronal Networks	Random Forest
Best BLP	10,549,483	7,438,495	9,142,525	2,746,101	1,754,834	2,096,890
Best Gates	3,704	2,244	3,335	2,075	905	1,236

Notes: Medians over 100 splits. 90% confidence interval in parenthesis. P-values for the hypothesis that the parameter is equal to zero in brackets.