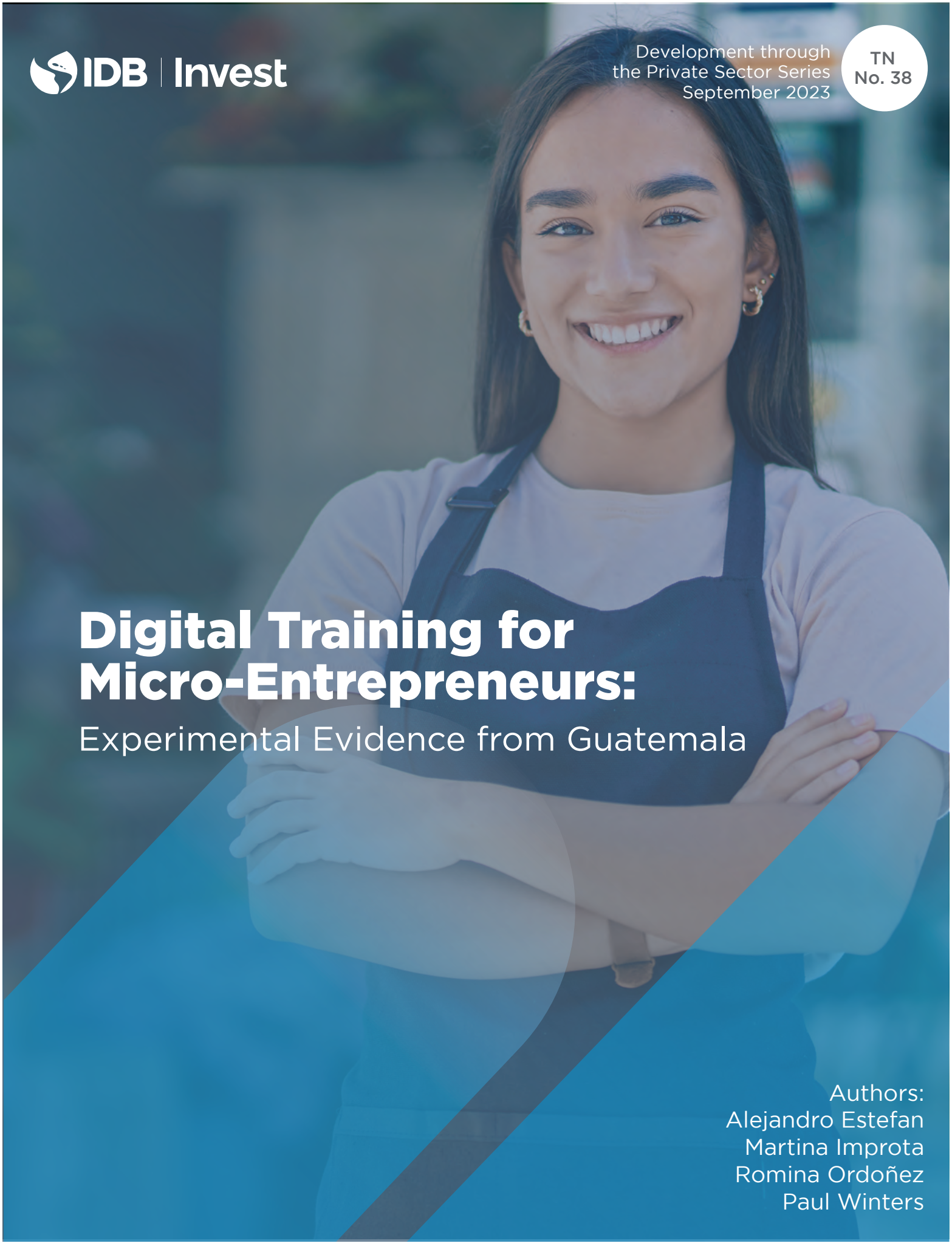

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Digital Training for Micro-Entrepreneurs: Experimental Evidence from Guatemala *

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Abstract

Previous literature shows minor impacts of in-person business training in developing countries, but few papers study the effectiveness of digital training. The randomized evaluation of a digital training program involving the franchise stores of a food retail chain in Guatemala, operated mainly by women, shows significant impacts on knowledge, business practices, sales, and profits. The digital training program combined a mobile app offering access to reproducible video capsules and virtual one-on-one consulting meetings. Consulting meetings were crucial in inducing engagement with the app's content. Program flexibility, internet access, and initial sales were key determinants of training effectiveness.

Keywords: business training, digital, micro-entrepreneurship, SMEs.
JEL codes: B54, C93, J16, L21, L26, M53.

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1 Introduction

Management matters for firms and entire economies. Firms with better management have higher productivity, profits, output growth, exports, R&D expenditures, and patents (Bloom et al., 2019). Further, differences in management practices account for about 30 percent of the total factor productivity gap between the U.S. and other countries (Bloom, Sadun and Van Reenen, 2016). Therefore, designing cost-effective policies to address management gaps is crucial for international development policy. While the effectiveness of formal in-person business training—the most prominent direct policy to target managerial practices (Scur et al., 2021)—has been extensively documented in developing countries (McKenzie and Woodruff, 2014; McKenzie, 2021), the effectiveness of digital training programs to improve management remains largely understudied.

Digital training may succeed where in-person delivery fails. For starters, digital delivery offers significant reductions in implementation costs for individual firms. According to Chang (2016), e-learning, which includes digital training, saves up to 60 percent of instruction expenses, including travel, facility rental, supplies, administrative costs, and salaries. Second, digital delivery offers greater flexibility than in-person training programs to trainees. This can help overcome the geographical limitations that hamper the delivery of educational programs in hard-to-reach locations in developing countries and facilitate participation among women, who often face greater time constraints than men (Bandiera and Zipfel, 2019). Flexibility may also increase training effectiveness directly by raising trainee effort and productivity, or it could indirectly make training more effective by reducing commuting times.[1] Third, digital training materials are easily stored in cloud space, which lowers their reproduction cost and increases material readiness for trainees. Zero reproduction costs make digital delivery ideal for re-training programs, including standardized programs for massive audiences and company-specific onboarding modules. Increased material readiness enables the formation of content libraries from which trainees can choose content to customize training to their specific needs.[2] Finally, digital training programs do not require physical proximity; a crucial feature made evident by the onset of the COVID-19 pandemic.

However, the impacts of digital training on knowledge, business practices adoption, and

[1] A relatively recent strand of the literature shows that remote work schemes increase worker effort and productivity directly (Barrero et al., 2021; Harrington and Emanuel, 2020) and substantially reduce commuting times (Choudhury et al., 2021). The mechanisms driving these results, such as a higher employee effort resulting from a high valuation for flexibility, as well as reductions in remote-work stigma, may also extend to labor training interventions.

[2] Given these numerous advantages, it is not surprising that a myriad of industry reports documented a rise in the use of digital training by executives and employees within American corporations, including companies as diverse as Ernst & Young, Deloitte, and LinkedIn, even before the onset of the pandemic (Hiremath et al., 2021).

profitability are far from obvious. First, persistence and completion rates of e-learning programs have been shown to be very low in the education literature.[3] Such low persistence rates may be explained by behavioral barriers particularly present in online instruction.[4] Second, while the decline in prices of ICT technologies over the last 20 years drastically improved internet access rates and smart device ownership worldwide, only 15 percent of the world's population can afford access to broadband internet (World Bank, 2016). Moreover, developing countries suffer from a large gender gap in smart device ownership (International Telecommunication Union, 2016). Because the implementation of digital training programs necessitates access to broadband internet and smart device ownership, limitations at the country level and within countries may severely limit take-up. Digital training programs may also increase inequality by disproportionately favoring the digitally-literate.[5]

This paper studies the causal impact of digital business training on knowledge, business practices adoption, sales, and profitability of micro-enterprises in developing countries. The empirical strategy of the study consists of a randomized field experiment conducted in partnership with a multinational company operating in the chicken retail sector of Guatemala, involving 498 franchise store owners across the country, most of which are women. The experiment randomizes the delivery of a digital training program at the store owner level. Training consists of a series of 28 short video capsules on 24 business management topics, which are progressively released on a weekly basis and last 67 minutes in total. These capsules are accompanied by knowledge quizzes and soft copies of training booklets containing exercises with an estimated total completion time of 6.5 hours. Trainees also receive three one-on-one calls of 30 minutes each with professional business consultants. The one-on-one calls are designed to address the needs of the franchise owners and facilitate take-up of the modules. The training program curriculum was custom-made for the franchise owners by a consulting company and covers a selection of topics like the franchisor's business model and the best business management practices in the food retail sector. Treatment is administered through a smartphone application that records all the participants' interactions with the training program materials, allowing us to measure treatment take-up accurately.[6]

[3] For instance, previous experimental evidence indicates that few of the enrolled students in a large, high-level economics course actually complete it (Banerjee and Duflo, 2014).

[4] See Escueta et al. (2020) for an excellent review of technological interventions aimed at addressing behavioral barriers in education and facilitating greater academic achievement.

[5] The polarizing effect of digital technologies has been documented in the literature before. For instance, evidence from Norway indicates that broadband internet introduction improves labor market outcomes for skilled workers but worsens the outcomes of unskilled workers (Akerman, Gaarder and Mogstad, 2015).

[6] To increase training take-up, the multinational company rewarded video capsule completion with digital money, redeemable for chicken products. Additionally, the business consultants sent personalized WhatsApp reminders and make telephone calls to the treatment group members to schedule the one-on-one consulting meetings. To prevent smart device ownership from hindering compliance, the company lent tablets to the store owners

The study leverages survey data, administrative records from the multinational company, and log file data from the mobile training app to measure impacts. Survey data includes a baseline survey administered a month before treatment and a follow-up survey administered six months after treatment. Both surveys contain a business knowledge exam designed to test key technical lessons from the training program topics and a battery of questions designed to measure the self-reported business practices and profits of study participants. Administrative records from the multinational company include monthly sales measured without error at the store level in pounds of product and USD, as well as store market entry and exit dates. These records are used to measure impacts on sales and market exit twelve months after treatment. Finally, the study records the interactions of each trainee with the digital contents of the mobile training app to analyze engagement trends during treatment.[7]

The empirical analysis of the paper proceeds in three steps. First, the paper reports the causal impacts of digital training on micro-entrepreneur knowledge, business practices, store sales, and self-reported profits from the field experiment. Digital business training increases the mean value of an overall knowledge and practices index by 7 percent relative to its mean for the control group at baseline.[8] This effect is explained by a statistically significant improvement in overall business knowledge by 5.2 percent, as tested by a yes/no exam, a betterment of marketing practice by 11 percent, and an improvement of 6.4 percent in finance and inventory management practices. The paper then investigates impacts on sales using administrative records. It reports that the experimental treatment results in a marginally significant increase in sales above their pre-trend, amounting to 6-12.7 percent. Finally, the paper examines the impacts of digital training on self-reported profits, reporting a positive and statistically significant impact of 16.4-21.8 percent, which is explained by the increase in sales, and a negative, albeit non-significant, effect on operating expenses.

An exhaustive examination of impact heterogeneity for all the study outcomes reveals evidence of heterogeneity in take-up and business practices. Take-up is higher for women than for men, indicating no gendered penalty for women in the effects of training.[9] However, digital delivery introduces a new type of penalty in take-up: broadband internet access. Specifically,

that did not own a smart device.

[7]Appendix I.2 analyzes the content of the one-on-one business consulting meetings using textual transcripts from meeting minutes kept by the consultants. This appendix reports text analysis results showing that business consultants emphasized precisely the training practices where the study reports significant impacts.

[8]For all survey-based outcomes, the paper reports effects in percentage terms relative to their respective means for the control group in the baseline survey. For store sales, the paper reports effects relative to the store mean in the administrative records for the control group in October 2021, corresponding to the last month of the baseline surveying period.

[9]This is in contrast to the in-person training literature, which reports a differential effect of training interventions on profitability for women (see McKenzie and Woodruff (2014) for a review), caused partly by gender differences in household responsibilities (Arráiz, 2018).

take-up is positive only for trainees that own a smartphone with a data plan or have broadband internet access at home. For business practices, the treatment effects of the intervention are stronger for trainees without previous experience and high entrepreneurial ability, consistent with previous literature.[10]

Second, the paper examines the mechanisms giving rise to these findings by leveraging engagement data from the log file of the mobile app. These data are used to investigate the impact of holding a virtual meeting with a professional business consultant on the probability of watching video capsules on a given date. To uncover causal effects, the paper utilizes an instrumental variables (IV) strategy that relies on the calendar availability of the instuctors as a source of exogenous variation in the timing of the consulting meetings. Holding a business consulting meeting raises the probability of watching video capsules on the same date by 13.8 percentage points, indicating that business consulting meetings are crucial in inducing digital engagement.

Finally, the paper models the cost-effectiveness (CE) of the digital training program under several alternative assumptions. The most conservative of these assumptions implies a cost-effectiveness ratio of 2.3, without including time and transport savings for trainees and consultants. This finding constitutes evidence that digital training programs have the potential to be cost-effective.

This study contributes to the literature on formal business training in developing countries, which is too vast to describe in detail in this article, but has been previously summarized in McKenzie and Woodruff (2014) and McKenzie (2021). While several randomized evaluations have measured the impact of different modalities of in-person training before, fewer studies have been conducted to measure the impact of digital business training programs. The only other randomized evaluation of a digital training program in a developing country is the study by Jin and Sun (2021), who find that a training program for new sellers provided by an e-commerce platform in China has a positive effect on sales. This paper's experiment is the first to measure the impact of digital training on physical businesses rather than e-commerce trade.

This study also contributes to the literature on formal business training in developing countries by offering highly accurate measures of sales, business practices, and knowledge. First, instead of relying on survey responses, this study uses administrative records on sales at the store level from the company distributing chicken and all other foods to the stores participating in the experiment, allowing it to measure sales without measurement error. A ubiquitous problem with previous studies in the business training literature is that impacts are measured using self-reported information from experimental surveys that are prone to measurement error, with the well-known implication that the resulting profitability measures depend on the type of questionnaire used to elicit information (De Mel, McKenzie and Woodruff, 2009). Sec-

[10] The latter finding is consistent with the "entrepreneurial capital" hypothesis (Maloney and Zambrano, 2022).

ond, the monthly administrative records on sales span over a five-year period prior to the randomized experiment, greatly improving the statistical power of the study regressions.[11] In a well-known article, McKenzie (2012) highlights the potential value of multiple measurements of experimental outcomes at relatively short intervals to reduce noise and improve power. Third, the intervention comprises franchise stores of relatively similar sizes operating within the same economic sector under a uniform business model. Thus, the study's local context parses out some of the heterogeneity in unobservable determinants of business practices and profitability of micro-enterprises, which plagues the training literature, given that most studies consider interventions that target micro-enterprises of vastly different sizes, economic sectors, and business models.

Finally, this paper joins the literature documenting the effectiveness of methods other than standard in-person training in improving the profitability of SMEs, including movies (Barsoum et al., 2022), mentorship (Brooks, Donovan and Johnson, 2018), handbooks of local practices (Dalton et al., 2021), meetings among firm owners (Lafortune, Riutort and Tessada, 2018), and consulting, outsourcing, and insourcing (Anderson and McKenzie, 2022). This study adds to this literature by documenting the effectiveness of a bundled approach consisting of the digital delivery of a combination of training and consulting.

2 Contextual Information

The field experiment results from a collaboration agreement signed in 2018 between IDB Invest, which is the private-sector arm of the Inter-American Development Bank Group, and *Corporación Multi Inversiones* (CMI), a multinational corporation based in Guatemala operating in the food, real estate, finance, infrastructure, and telecommunications industries of 15 Latin-American countries. The partnership between IDB Invest and CMI aims to create economic opportunity for entrepreneurs and their families while also increasing access to fresh, safe food in the surrounding communities. Improving access to affordable and nutritious foods is of particular importance for Guatemala, given that it is ranked 106 out of 120 in the list of countries with the lowest rates of chronic malnutrition and that 47% of all Guatemalan children under the age of five suffer from stunting (Sanchez, Scott and Lopez, 2016).

Casas de Pollo Rey (CDPR) or "The House of the King of Chicken" is one of the retail chains of the food sector branch of CMI, specializing in cooked and uncooked chicken and pork products since 2014. The CDPR retail chain operates across the country under a franchise business model

[11] The five-year period refers to the dataset collected for this research cooperation. As described in Section 2, high turnover rates of franchise stores imply that not all the stores in the experimental sample were open five years before the experiment. Likewise, several franchise stores exited the market during the study period.

in which local entrepreneurs own and operate small-scale franchise stores. In November 2020, CDPR operated 752 franchise stores, out of which 317 were located in the central region, 305 in the west zone, and 130 in the east, as shown in Figure A.1 of Appendix A. Only 87 franchise stores were located in Guatemala City's municipality, within the country's central region. The model store is a small shop furnished with refrigeration equipment and promotional decoration, as shown in Figure A.2 of Appendix A. The list of products sold by CDPR includes 70 cooked and uncooked chicken and pork products, out of which 19 must be offered in all stores and 51 are optional. Table A.1 in Appendix A presents the complete list of products.

To become franchise owners, interested entrepreneurs fill out an application on CDPR's website or by telephone. The applicant must declare 12-17 thousand Quetzales (1,558.4-2,207.8 USD) in unencumbered funds and propose a store location.[12] Human resources personnel conducts an initial interview with the applicant to further explain CDPR's business model. If the applicant remains interested, the franchisor's operation team evaluates the proposed store location in terms of pedestrian traffic, distance to the closest CDPR neighbor, and safety. Corporate managers prefer safe locations in busy commercial and residential areas and try to ensure a minimum distance of 1.5 km to the nearest neighboring store to prevent business stealing. If a location proposal is approved, the applicant signs a franchising contract with CDPR. The terms of the agreement include a CDPR products' exclusivity clause, a hygiene clause ensuring franchisees keep food products properly refrigerated, a clause by which the franchisee commits to registering as a federal taxpayer and obtaining all necessary sanitary permits for operation, and a clause by which the franchisee commits to opening the store at least six days per week. If the agreement is signed, CDPR leases all store equipment to the franchisee, including freezers and fridges, provides exterior painting services, and gives the franchisee instructions on how to reorder food inventories, while the franchisee is responsible for purchasing food inventories and kitchen utensils. Finally, the franchising relationship continues for an unlimited term, unless the franchisee voluntarily terminates it, or the franchisor revokes the franchise for violations of contractual clauses.

Women from low-income households make up the majority of the franchise owners and decision-makers. A survey involving 196 randomly selected franchise owners, conducted by IDB Invest in December 2018 (Table C.1 in Appendix C contains a list of summary statistics from this survey), revealed that women comprise 75 percent of the group of store owners. They are, on average, 37 years old and have 2 children. Furthermore, owners are typically members of low-income households, as their average self-reported monthly household income was 6,519

[12] For all conversions, the paper uses the official exchange rate of 7.7 Quetzales/USD corresponding to December of 2018, published by the Federal Reserve Bank of St. Louis. For more details, see Federal Reserve Bank of St. Louis (2021).

Quetzales or 847 USD. This income level is below the cost of a basic goods basket, which was 8,219 Quetzales in December 2018, according to the national institute of statistics or *Instituto Nacional de Estadística*.

In contrast to supermarkets and other large vendors, CDPR franchise stores almost exclusively serve clients from nearby neighborhoods. A survey administered to 108 female CDPR clients selected at random from the stores across the country in November 2018 reveals that they travel short distances and pay frequent visits to their nearest store. Specifically, each client visits her closest CDPR store 12 times per month on average and buys 3.4 pounds of chicken per visit. Furthermore, 56.5 percent of the clients travel by foot, averaging 12 minutes per journey each way, while 36.1 percent use some form of public transport, averaging 34 minutes each way. Only 7.4 percent travel by car or taxi. Further summary statistics from this survey are contained in Table C.2 of Appendix C.

CDPR franchises are small businesses. A survey administered to all 752 franchise stores operating in November 2020 (see Table C.3 in Appendix C for this survey's summary statistics) shows that 36.3 percent of the franchises did not have any paid employees, 51.7 percent only had one full-time[13] employee, and the remaining 12 percent had 2-4 full-time employees, with autonomy and responsibilities typically limited to daily operations, such as customer service, food handling, processing payment, and cleaning. Additionally, family members of the owner worked without pay for at least 20 hours per week in 29.4 percent of the franchises. In the same month, store-level administrative records show that sales were 2,248 USD on average, with substantial variation in sales across franchise stores. Figure 1 presents the sales distribution, which is skewed to the right, with a median of 1,587 USD, an interquartile range of 2,067 USD, a minimum of 174 USD, and a maximum of 10,281 USD. Additionally, this figure shows that the entire distribution of sales has shifted leftward each year since 2017.

CDPR store owners and operators need business training for three reasons. First, store owners typically do not have any substantial business experience and do not receive any substantial training when opening their first store. According to the same survey administered to 196 randomly selected owners in December 2018, 62 percent of the store owners had not previously owned a business, and 55.6 percent had not received any business training before opening their store. Second, store turnover and exit levels are exceptionally high. While the total number of franchise stores increased from 552 in January 2017 to 752 in November 2020, over the same period, there were 28 store openings and 21 exits on average each month. Third, there was a declining trend in monthly mean sales per store before the implementation of the training program. From January 2017 to 2020, aggregate sales of all CDPR franchise stores remained stagnant at around 2.1 million USD, despite a 70 percent increase in the number of active stores.

[13] Guatemala lacks a legal framework for part-time work (Eberhard-Ruiz, 2021).

3 The Digital Training Program

The digital training program is designed to upgrade the business skills of the franchise store owners of CDPR, which are working with CMI. Intending to tailor the program to the needs of the franchise store owners, IDB Invest hired *Fundes*, a consulting company headquartered in Costa Rica, to conduct an initial diagnosis of the CDPR stores' business practices. The initial diagnosis consisted of 9 interviews with CMI corporate executives, 2 online focus groups with 5 randomly selected franchise owners each, and 50 telephonic surveys applied to a randomly selected group of franchise owners. Based on the diagnosis results, the consulting company designed the training program.

The final training program lasts 7 weeks and consists of 28 short video capsules, a workbook with additional training exercises, and 3 one-on-one video meetings of 30 minutes with a professional business consultant. The training topics covered by the training materials include branding, operations, patrimonial security, marketing, equipment maintenance, hygiene and food safety, financial management, gender empowerment, inventory management, digital payment options, and customer satisfaction.

Video capsules are released gradually every week, and participants are free to watch them at their preferred time from the moment they are released. They are between 1 and 7 minutes, and their total duration is 67 minutes. As shown in Figure B.1 of Appendix B, they focus on a combination of formal business administration concepts and simple heuristic guidelines and rules-of-thumb.[14] Table B.2 in Appendix B contains a detailed description of the objective and content of each video capsule.

The workbook contains practical exercises, which take 6.5 hours to complete, according to a breakdown elaborated by the consulting company. The workbook also includes templates of the necessary materials to adopt the practices covered in the video capsules (e.g., a template for a monthly cash flow).

In the one-on-one video meetings, a professional business consultant provides personalized advice and strategies to improve the store owner's business practices. In their first meeting, the business consultant conducts an initial diagnosis, provides individualized advice, and sets concrete next steps for the implementation of the business practices covered in the video capsules. These next steps aim exclusively to commit trainees to advance in the implementation of specific business practices, rather than committing trainees to the formulation of personal goals about business outcomes like sales or profitability. In the second and third meetings, the consultant provides technical assistance and feedback for the implementation of their advice

[14] A relatively recent strand of papers by Drexler, Fischer and Schoar (2014) and Arráiz, Bhanot and Calero (2019) shows that training focused on heuristic guidelines and rule-of-thumb advice has positive impacts on training outcomes and can even work better than providing formal business training.

from the first meeting. Training participants are free to schedule the video meetings at their preferred time and date, although this is subject to the availability of the business consultants.

As mentioned in the introduction, training take-up is an issue of particular concern for the digital delivery of education in developing countries due to (1) relatively low smartphone ownership, broadband internet penetration, and digital literacy rates, as well as expensive internet data prices, and (2) behavioral biases that affect online instruction by lowering course persistence. To address smartphone ownership and digital literacy, the multinational lent a tablet to store owners that did not own a smartphone, and the consulting company provided step-by-step instructions to download the app and create log-in credentials during an online welcome workshop and through phone calls to individual trainees. To ensure course persistence, the three strategies described in detail next were adopted.[15,16]

First, the consulting company sent standardized weekly WhatsApp reminders to all training participants when new video capsules were released, personalized reminders of their scheduled one-on-one mentoring sessions, and personalized weekly text messages comparing their individual training completion rates against the rates of other store owners in the training group.[17,18] Notably, all training content was strictly excluded from these messages to prevent them from directly impacting specialized knowledge, as measured by the score in the knowledge exam, which was explicitly developed to assess the respondent's command over the training program's most technical concepts rather than its general content. In contrast, suggestive evidence presented in Appendix G indicates that reminders successfully increased take-up, as video capsule completion times are strongly correlated with the timing of these reminders.

Second, the mobile application required users to answer a knowledge question after finishing each video capsule and before moving on to the next training module. Panel A of Figure B.3 in Appendix B shows that mobile app users could only watch unlocked video capsules, signaled with a check mark. App log file data reveals that trainees unlocked training content in their first attempt only 65.7 percent of the time. Furthermore, watch time increased on average by 35.7 percent after each additional attempt, thus indicating that trainees exerted effort to learn the correct answer and not simply guessed after a failed attempt. Nonetheless, there is evidence of content skipping, as trainees completed the video capsules faster than their actual duration on 10.9 percent of the occasions in which their first attempt was successful.

[15] The consulting company also gave a graduation certificate to participants who completed the training program. However, graduates were notified about the certificate only once the intervention had ended.

[16] In the intervention pilot, these strategies resulted in 13 out of 15 owners completing the training program on time. The two franchise owners who did not finish the program exited the market before the start of the program.

[17] Evidence in the behavioral economics literature indicates that SMS reminders delivered as planning prompts help improve task and course completion rates (Cadena and Schoar, 2011; Hume et al., 2018; Yeomans and Reich, 2017). Social comparisons and bench-marking are effective in motivating low-performing firms (Seither, 2021).

[18] The transcripts of all the reminders used in the intervention are contained in Table B.3 of Appendix B.

Third, the CMI corporation rewarded training participants with digital money for each training module completed, redeemable for chicken and pork inventories. Panel B of Figure B.3 presents the screen message participants saw, detailing the products they could purchase using their digital money after completing a training module. Table B.1 of Appendix B lists the monetary value of the in-kind rewards that training participants could redeem, which ascended to a maximum of 70.2 USD for participants that completed all training modules. Section 7.6 tests whether these in-kind rewards induced heterogeneous effects on sales. It finds that they had no additional impact on sales.

In addition to the above measures aimed at maximizing training take-up, the study also adopted two measures to guard against treatment group contamination. First, the mobile app required user authentification to access training content. As shown in Figure B.2 of Appendix B, the app required all users to register and verify their cell phone number, agree to terms and conditions, and input their personal information and their store code. This code is an identification number used by the CMI corporation to keep track of each store's sales, as well as by the store owners to retrieve their financial information for fiscal purposes. Thus, franchise store owners had a strong incentive not to share their code with anyone. Second, data from the log file of the mobile application was used to track the number of times each participant watched a video, the number of modules completed, and the time spent watching each video. The IP addresses of all mobile application users were also tracked to detect and shut down any suspicious activity.

Finally, the mobile app did not allow for social interactions between trainees through a forum or WhatsApp group, limiting the scope for information sharing through digital means. Moreover, training did not take place in a physical venue nor included any recurrent event that would allow store owners to meet each other. Furthermore, the geographical distance between nearest neighbors was 3.6 kilometers on average in the experimental sample, making in-person information sharing unlikely. However, franchisees may have shared information about the training program with their personal networks, which may include other CDPR owners. This type of information sharing could have led control group members to improve their business practices in response to the information conveyed to them by their peers, potentially biasing the treatment effect estimates of the study downward.

4 Experimental Design

To uncover the causal impact of digital training on business outcomes, this study uses a field experiment involving 498 out of the 582 CDPR store owners operating in Guatemala in September

2021.[19] The store owners in the experimental sample managed 539 stores in the same month. The remaining franchise owners were unwilling to participate in the study, primarily reporting general distrust of telephone surveys, particularly given the high extortion rates prevailing in Guatemala.[20] Recent work by Brown et al. (2021) and Estefan et al. (2022) indicates that extortion is higher for high-value businesses and that extortion rates vary by location. A formal test for observable differences in average sales and store location between the stores managed by the owners in the experimental sample and the stores managed by non-participating CDPR owners is presented in Table D.1 of Appendix D. While the existence of unobservable correlates of the decision to participate cannot be ruled out, this test finds no evidence of any statistically significant difference across the two groups in any of these variables.

The field experiment used in this study randomized assignment into a single treatment consisting of the digital training program described in the previous section. As mentioned in the introduction, randomization was stratified by gender, year of opening of the owner's first franchise store, initial sales, and region to ensure a balanced sample. This stratification strategy yielded the 35 strata shown in Table D.2 of Appendix D. Armed with this stratification strategy, random assignment was then conducted relying on a computer program to ensure replicability by setting the program's seed to the randomly-chosen number 327195. This number was specified before obtaining the final list of training participants, as attested by the trial plan available online in the AEA RCT registry. Finally, randomization was clustered at the store owner level. This level of analysis was chosen because the sample includes 35 multi-store owners who managed a total of 76 franchise stores in September 2021, so treatment impacts in any of these stores may spill over to all stores managed by the same owner.

Randomization resulted in 251 out of 498 store owners assigned to the treatment group and the remaining 247 owners assigned to the control group. In terms of stores, randomization resulted in 273 out of 539 stores assigned to the treatment group and the remaining 266 stores assigned to the control group.

The timeline for the implementation of the intervention is as follows. A surveying company administered the baseline survey by telephone between the first week of September and the first week of October 2021. After levying this baseline information, owners were randomized into the treatment or the control group in the second week of October 2021. The training program was administered by the consulting company hired by IDB Invest between mid-October and mid-

[19] Ethical approval was obtained from the Office of Research Compliance at the University of Notre Dame (IRB Protocol Number 20-10-6283). This study is registered in the AEA RCT Registry, and the public URL for the trial is here: https://www.socialscienceregistry.org/trials/7433.

[20] Extortion is an endemic crime perpetrated by gangs in the Northern Triangle region of Central America, which includes El Salvador, Guatemala, and Honduras. Of these countries, Guatemala has the highest rates of extortion to small businesses (InSight Crime and Global Initiative Against Transnational Organized Crime, 2019). The cost of criminal violence in Guatemala has previously been estimated at 8.7 % of GDP (Guerra et al., 2016).

December 2021, according to the program schedule detailed in Table D.3 of Appendix D.[21] The surveying company levied a follow-up survey by telephone between the last week of May and the last week of June 2022.

The main experimental hypothesis of this study is that digital business training leads to an improvement in business outcomes. While the ultimate outcome of interest is business profitability, the study tests for impacts on each of the intermediate outcomes in a well-defined theory of change. The rationale for expecting a digital business training program to impact business outcomes is similar to that of many previous studies that examine the impact of in-person business training. In particular, the theory of change is (1) treatment assignment increases the amount of time spent watching online capsules and interacting with business consultants, (2) the materials of the training program improve knowledge of the CDPR franchising model and the best business practices in the food retail sector, (3) franchise managers adopt the business practices that they learn, and (4) business revenue increases, but expenses remain unchanged or drop, so profits increase.

For each step in the theory of change, indicators are constructed to measure the training program's impacts. First, data from the log file of the mobile application is used to construct two indicators of treatment take-up: time spent watching video capsules, and number of training modules and mentoring sessions completed. These indicators enable the construction of measures of full and partial treatment compliance. Additionally, video capsule completion dummies with daily frequency are constructed for all training participants to measure the influence of the timing of the consulting meetings and the reminders on course persistence. Second, to measure actual knowledge and self-reported business practices, a knowledge and business practices index is constructed by averaging the answers of each store owner in the experimental sample to a short knowledge test and a battery of business practices questions administered as part of the baseline and follow-up telephonic surveys. Third, data on each store of the experimental sample is extracted from the CDPR's administrative records to construct monthly sales. Finally, self-reported estimates of mean monthly revenue, operating expenses, and profits, also from the baseline and follow-up surveys, are used to examine the training program's impact on two alternative measures of profits: self-reported profits and self-reported revenue minus expenses.

While the relevance of the theory of change follows from previous studies, including robust empirical evidence indicating that business practices explain a large share of variation in business outcomes in developing countries (McKenzie and Woodruff, 2017), the experimental design does not allow the study to verify that digital training affects profitability exclusively

[21] A small group of store owners was allowed to hold business consulting meetings in January, given severe disruptions in calendar availability caused by the December holidays.

through the channels in the causal pathway of the theory of change. To address this concern, survey data is used to test and rule out alternative mechanisms through which digital training may impact business outcomes, including increased entrepreneurial effort, as reflected in the store opening hours, the number of employees in each store, and business stealing.[22]

5 Data

The study draws on several data sources to measure treatment take-up and training impacts on business knowledge, business practices, sales, and profits. The paragraphs below describe the data sources used to construct the key variables of the study.

Mobile application log file.- Given the potentially low rates of online education persistence previously highlighted in the literature (Banerjee and Duflo, 2014), a key outcome of the study is treatment completion. To measure this outcome, the study leverages individual-level data from the mobile application log file on the 251 training participants' behavior, including their dates of access to the application and time spent watching each video capsule. Armed with this data, it first constructs 28 variables with a daily frequency capturing the dates of capsule completion for each participant, defined as the event that the participant finishes watching the video capsule and afterward responds correctly to the questions of a short knowledge quiz. The study uses this data to investigate the effect of the business consulting meetings and the unexpected release dates of personalized WhatsApp and phone call reminders on daily completion rates.

Baseline and follow-up survey.- According to the theory of change, digital training increases business profitability by improving business knowledge, business practices, and store sales, while potentially lowering production costs. To construct separate indicators of these outcomes, the study uses data from the baseline and follow-up surveys, levied by phone given the COVID-19 contingency that started on March 2020.[23] First, the study uses the study participants' responses to a short business knowledge exam consisting of 11 true/false questions included in both survey waves to construct an objective measure of business knowledge, defined as the number of correct answers divided by the number of questions in the knowledge exam. Next, to measure self-reported business practices, it uses the participants' responses to a

[22] Tables H.11 and H.12 of Appendix H.7 report non-significant impacts of digital training on store opening hours and the number of employees in each store, respectively. Table H.4 of Appendix H.4 reports non-significant impacts of the number of nearby treated stores and the distance to the closest CDPR neighbor on the probability of store exit from the market.

[23] To maximize interviewing quality, a local telephonic surveying company was hired, and all conversations are recorded to minimize measurement error.

survey module consisting of 26 Yes/No questions on self-reported practices in the business areas of branding, operations, patrimonial security, marketing, equipment maintenance, hygiene and food safety, financial management, gender empowerment, inventory management, digital payments, and customer satisfaction. The answers to these questions are used to construct four practices indexes for (1) marketing, (2) financial planning and inventories, (3) operations and training, and (4) time management, defined as the share of practices followed by the participant in each of these categories. The items included in each index are detailed in Table F.1 of Appendix F. Furthermore, an overall knowledge and business practices index, defined as the simple average of the test score and the number of best practices followed by the participant, is constructed. Finally, to measure self-reported business outcomes, the study uses the study participants' responses to three questions that ask them to report each of their stores' mean monthly profits, operating expenses, and total revenue. Figure E.1 in Appendix E shows the transcript of the baseline and follow-up survey in English.

Sales administrative records.- To measure the primary outcome of the intervention, the study relies on CMI's administrative records of CDPR sales. These records contain monthly store-level information on the total value of sales in USD and their weight in pounds, as well as the value of sales for each of three broad product categories: raw chicken, raw pork, and prepared foods. These administrative records run from January 2017 and include the universe of CDPR stores that ever operated in Guatemala. In addition to providing an accurate sales measure for the experiment, these records document the reasons for each store's exit from the market, which include definite store closures, shifts to a different line of business in the same store location, changes in the name of the legal owner to avoid personal income taxation, and store code changes due to store relocation or for fiscal purposes, such as avoiding corporate and payroll taxation.

6 Empirical Strategy

This section presents the empirical strategy used to measure the causal impacts of digital business training. It begins by describing the regression model used to measure treatment take-up and the impact of training on business knowledge, business practices, and self-reported business outcomes in Section 6.1. This section also discusses the strategy followed to prevent false positives, which is crucial given that the paper's empirical analysis investigates impacts on several related practices and outcomes. Section 6.2 then turns to describe the regression framework used to estimate the impact of training on store sales. Finally, Section 6.3 discusses the strategy followed to estimate the heterogeneous impacts of the intervention.

6.1 Take-Up, Business Knowledge, and Business Practices and Outcomes

Ordinary Least Squares (OLS) is used to estimate the intention-to-treat (ITT) effect of the digital training program on the post-treatment business outcome Y_i of the franchise store owner i, given by β in the following linear regression model:

$$Y_i = \alpha + T_i\beta + \mathbf{X}_i'\boldsymbol{\gamma} + \varepsilon_i, \tag{1}$$

where T_i is a treatment dummy that takes the value of 1 if the franchise owner is a member of the treatment group and 0 otherwise, and $\mathbf{X}_i$ represents a vector of strata dummies. Standard errors are robust to heteroskedasticity of unknown form.

The study tests multiple hypotheses pertaining to the impact of a digital training program on several related business concepts, practices, and outcomes, which could lead to false discoveries if the analysis ignores that the probability of rejecting at least one true null hypothesis increases with the number of tests. Thus, for each of two families of hypotheses, pertaining respectively to (1) knowledge and business practices and (2) business outcomes, the procedure described in Anderson (2008) is used to compute sharpened q-values, which control for the false discovery rate (FDR), or the proportion of rejections that are "false discoveries" or type I errors, in addition to reporting ordinary p-values.[24]

6.2 Store Sales

A different strategy is used to measure the impact of digital business training on sales, given the availability of five years of monthly CDPR administrative records. In particular, the study measures the impact of digital training on store-level sales relative to their pre-trend instead of measuring impacts at the owner level. The following panel data model is estimated:

$$Y_{it} = \alpha + T_{it}\beta + \gamma_i + \delta_t + (\mathbf{X}_{i,t_0} \cdot t)'\boldsymbol{\lambda} + \varepsilon_{it}, \tag{2}$$

where Y_{it} are the sales of store i in month t, T_{it} is a treatment dummy that takes the value of 1 if the franchise owner of store i is a member of the treatment group and t is a post-treatment month, and 0 otherwise. The parameter γ_i is a store fixed effect, which controls for the time-invariant characteristics at the store level that correlate with sales, including the store location. The regression specification controls for the time-specific determinants of sales that affect all

[24] The empirical analysis that follows does not correct for multiple hypothesis testing across families of hypotheses, as each outcome family may be of individual interest to policymakers in its own right. Since different policymakers may potentially have different rules or "outcome weights" to decide on policy implementation, the paper's empirical analysis uses independent testing procedures and report impacts separately for each outcome family. See Viviano et al. (2021) for a formal discussion of when to use multiple hypothesis testing.

stores equally, such as the COVID-19 lock-downs, by including the δ_t time dummies. Furthermore, it controls for time trends that depend on initial store sales and municipality-specific trends, included in the $\mathbf{X}_{i,t_0}$ vector. Including these controls is necessary to correct for differential sales trends arising by chance prior to treatment, as discussed in detail in Appendix H.3. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.

Additionally, to gain power in estimation,[25] the following ANCOVA specification is estimated using 12 rounds of monthly sales data post treatment,[26] as follows:

$$Y_{it} = \alpha + T_i\beta + \mathbf{X}_i'\boldsymbol{\gamma} + \delta_t + \mathbf{Y}_{i,0}'\boldsymbol{\lambda} + \epsilon_{it} \tag{3}$$

where Y_{it} are the sales of store i in month t, T_i is a treatment dummy that takes the value of 1 if the owner of store i is a member of the treatment group and 0 otherwise, $\mathbf{X}_i$ is a vector of strata dummies and dummies for missing data for 12 rounds of pre-invention sales, δ_t are time dummies, and $\mathbf{Y}_{i,0}$ is a vector of 12 rounds of monthly pre-intervention sales and sales trends. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.

6.3 Heterogeneous Effects

To test for heterogeneous effects within the regression framework of Section 6.1, the treatment indicator is interacted with one dichotomous variable of interest at a time, as follows:

$$Y_i = \alpha + T_i\beta + Z_i\eta + (T_i \times Z_i)\theta + \mathbf{X}_i'\boldsymbol{\gamma} + \varepsilon_i, \tag{4}$$

where β denotes the effect of treatment, η denotes the direct effect of Z_i, and θ denotes the differential effect of treatment on the group with $Z_i = 1$. This regression model is estimated via OLS, and standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.

Finally, to estimate heterogeneous impacts on sales within the differences-in-differences framework described in Section 6.2, Z_i is interacted with with T_{it}, as follows:

$$Y_{it} = \alpha + T_{it}\beta + (T_{it} \times Z_i)\theta + \gamma_i + \delta_t + (\mathbf{X}_{i,t_0} \cdot t)'\boldsymbol{\lambda} + \varepsilon_{it}, \tag{5}$$

[25] The power gains from the ANCOVA specification are relatively small throughout the empirical analysis in Section 7. The reason is a high auto-correlation coefficient of 0.96 for sales in the administrative records (see Figure H.1 in Appendix H.1 for a 10-month auto-correlogram). As mentioned in Numeral 1 of Section 4.1 of McKenzie (2012), gains from ANCOVA estimation are relatively little for highly autocorrelated outcomes (e.g., ρ=0.6 to 0.8).

[26] This specification is analog to specification (7) in McKenzie (2012).

where θ denotes the differential effect of treatment on the group with $Z_i = 1$. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.

7 Impacts on Knowledge, Business Practices, Store Sales, and Profits

This section presents the study's impact estimates of the causal impact of digital business training on micro-entrepreneur knowledge, business practices, store sales, and self-reported profits. It begins by demonstrating the quality of the randomization procedure by providing a balance table of the outcome and control variables in the baseline survey and store sales in the pre-treatment months in Section 7.1. Next, it presents the attrition analysis results in Section 7.2. It moves on to discuss impact estimates for take-up and business practices in Section 7.3 and store sales in Section 7.4. It then reports the impact estimates for profits in Section 7.5. Finally, it presents the results from the heterogeneous effects analysis in Section 7.6.

7.1 Checking Pre-Treatment Balance of Outcome and Control Variables

Table 1 presents evidence of pre-treatment balance for crucial outcomes and control variables. Panel A compares the outcome means between the 251 store owners in the treatment group and the 247 store owners in the control group for business knowledge, practice indexes, and demographics, including entrepreneurial ability category (i.e., A, B, or C). Panel B compares the outcome means between the 273 stores in the treatment group and the 247 stores in the control group, including store sales and self-reported revenue, costs, and profits. For each variable, Columns (1), (2), and (3) present the number of observations and the mean and standard error for the control group, whereas Columns (4), (5), (6) show the respective number of observations, mean, and standard error for the treatment group. Column (7) presents the p-value for a two-sided t-test of difference in means between the treatment and the control group for each variable. These tests fail to reject the null hypothesis of no difference in means for all variables in the table at conventional significance levels.

7.2 Handling Missing Values

Between the baseline and the follow-up survey, 48 store owners attrited from the experiment. These store owners represent 9.6 percent of the list of 498 store owners in the baseline survey. Since the administrative records track all store exits, they can be used to infer, through cross-examination of the survey responses and the administrative records, the reason why stores drop

from the sample. This cross-examination exercise reveals that 31 store owners established different businesses in the same locations, and 17 dropped out because their stores permanently closed.

In terms of stores, attrition rates were higher, which is in line with the high rates of turnover documented in Section 2. From September 2021 to June 2022, a period that corresponds to the span of time between the baseline and the follow-up survey, 92 stores attrited from the experimental sample. Examination of CDPR's administrative records reveals that 17 stores permanently closed, 33 established a different business in the same location, 14 changed the name of the legal owner to avoid personal income taxation, and 28 changed their store code due to store relocation or for fiscal purposes, such as avoiding corporate or payroll taxation.

Given attrition, the empirical analysis that follows rigorously tests whether treatment impacted the odds of dropping from the experimental sample. Table 2 presents the differential attrition analysis results. It begins by testing the effect of treatment assignment on store owner attrition at follow-up in Panel A. Column (1) shows the coefficient from an OLS regression of an attrition indicator on the treatment assignment dummy, including strata dummies as controls. The estimated effect is non-significant at conventional levels and is also close to zero in magnitude. The table then decomposes the attrition indicator into two mutually exclusive categories: store closure and establishment of a different business in the same location. Column (2) shows no statistically significant effect of treatment assignment on owner attrition due to store closure, while Column (3) also shows no statistically significant effect on the probability the owner attrits the sample by establishing a different business in the same location. Panel B reports similar findings for store attrition by June 2022, with additional results reported in Columns (4) and (5), of no statistically significant effects of treatment on the probability of changing the name of the legal owner or changing the store code, respectively. Thus, in what follows, regression estimates are not adjusted for differential attrition, as there is no evidence of this issue in the data.[27]

7.3 Take-Up, Knowledge, and Business Practices

The empirical analysis then turns to investigate the effects of treatment assignment on take-up, knowledge, and business practices in Table 3. This table presents ITT estimates obtained by re-

[27] The pre-analysis plan, published in the AEA RCT Registry, envisaged applying a two-step inverse probability weighting (IPW) technique introduced in Campbell et al. (2014) and Doyle et al. (2017) to correct impact estimates in the event of differential attrition. While the proposed technique would have allowed us to account for the observable determinants of attrition, its validity rests on the assumption that attrition patterns can only be explained by observable characteristics and are not determined by any unobservable trait of the franchise owners. Thus, the empirical analysis in subsequent sections follows the charted course of action and does not implement this adjustment, absent differential attrition based on observables.

gressing each outcome variable on a dummy for treatment assignment in the follow-up survey. Column (1) shows that treatment assignment increases the probability of treatment take-up, as measured by a dummy for graduation, by 50.4 percentage points (t-statistic=14.8). The criteria used by the consulting company for graduation consist of completing all three personalized business consulting meetings and watching at least 70 percent of the video capsules in the mobile app. Alternative take-up definitions requiring different video capsule completion rates yield similar impact estimates of treatment assignment on the probability of take-up under, as shown in Table H.8 of Appendix H.7.

The table then shows the effects of treatment on knowledge and business practices in Columns (2) through (7). Column (2) reveals a statistically significant increase of 0.029 points (t-statistic=2.4) in the business knowledge test, which is equivalent to a 5.2 percent increase relative to the mean exam score for the control group in the baseline survey. In Column (3), the table presents a strongly significant effect of 0.069 points (t-statistic=3.3) on the marketing index, which is equivalent to an 11 percent increase relative to the control mean at baseline. Next, in Column (4), the table shows a statistically significant effect of 0.047 points (t-statistic=2.1) on the finance and inventories index, equivalent to a 6.4 percent increase relative to the control mean at baseline. There is no significant impact on the business operations index, which includes employee training and onboarding practices, or the time management index, as shown in Columns (5) and (6), respectively. Finally, Column (7) presents a strongly significant effect of 0.05 points (t-statistic=3.3) on the overall knowledge and business practices index, equivalent to a 7 percent improvement relative to the control mean at baseline. All the statistically significant effects resist Anderson's sharpened q-value correction for multiple hypothesis testing.

7.4 Store Sales

The paper reports impacts on store sales relative to their pre-trend, which are measured without error using CMI's administrative records, in Table 4. Panel A reports the ITT on store sales in USD from the differences-in-differences specification. It presents results for three estimating samples: the full experimental sample, the sub-sample of stores that remain open throughout the study period, and the sub-sample that excludes stores run by multi-store owners. The second sample comprises only time variation in mean monthly store sales that is not influenced by entry or exit decisions, while the third sample comprises the stores directly operated by trainees. Column (1) reports a marginally significant increase in sales amounting to 158.7 USD above their pre-trend (t-statistic=1.7) for the estimating sample that includes all stores in the experimental sample, equivalent to a 6 percent increase in sales relative to the mean for the control group in October 2021. Column (2) also reports a marginally significant impact of

220.7 USD (t-statistic=1.9), or 7.2 percent relative to the control mean in October 2021, for the estimating sample that only includes stores that remained in operation throughout the study period. Finally, Column (3) reports a statistically significant impact at conventional levels of 231 USD (t-statistic=2.2), or 9.6 percent relative to the control mean in October 2021, for the estimating sample of that excludes the stores of multi-store owners. These findings indicate that effects on sales are larger conditional on remaining in operation and are stronger for stores operated directly by trainees. The latter of these findings is consistent with the absence of a significant effect on employee training practices reported in the previous section.

Panel B of the table reports the ITT on store sales in USD from the ANCOVA specification. For the sample that includes all stores in the sample that had not exited by January 2022, which is the first month of the post-treatment period, Column (1) reports a marginally significant impact of 207.2 USD (t-statistic=1.8), equivalent to an 8 percent increase relative to the control mean in October 2021. Column (2) reports a statistically significant effect of 280.7 USD (t-statistic=2.1) for the sample of stores that remained in operation throughout the study period, or 9.4 percent relative to the control mean in October 2021. Finally, for the sample that excludes stores owned by multi-store owners, Column (3) shows an impact of 304.2 USD (t-statistic=2.3), or 12.7 percent relative to the control mean in October 2021, which is also statistically significant at conventional levels. These findings are consistent with the results from the differences-in-differences specification in Panel A.

Thus, there is evidence for a 6-12.7 percent increase in sales resulting from digital training, depending on the empirical strategy and estimating sample of operating stores. Appendix H.4 shows that the positive impacts of digital training on sales are not significant when the estimating sample is expanded to include stores after they exit by coding their sales as zero in the months following their exit. This result is consistent with the previous finding that treatment has no significant impact on the probability of store attrition, reported in Table 2.

7.5 Profits

Self-reported information on store-level business outcomes from the follow-up survey is used to analyze impacts on profits. As in other developing countries, CDPR franchisees often do not keep financial records, making profit impact estimation reliant on recall. As mentioned in Section 5, the survey asks franchisees to directly report each of their stores' mean monthly revenue, operating expenses, and profits. The question regarding operating expenses explicitly asks franchisees to include store rent, employee wages, loan payments, taxes, utility fees, and other services, such as cleaning, in their estimation. These data enable the comparison of two alternative profit measures: reported profits and reported revenue minus expenses.

While the paper reports impacts on both profit measures, the former measure is preferred for three empirical reasons, which align closely with the reasons cited in De Mel, McKenzie and Woodruff (2009) to utilize self-reported profits rather than reported revenue minus expenses as a reasonable measure of actual profits. First, the question regarding operating expenses in the follow-up survey does not explicitly ask franchisees to include the cost of food inventories. This cost is difficult to calculate from self-reported revenues because the markups implied in the final consumer pricing guidelines, regularly issued by the franchisor,[28] differ across food product categories (i.e., raw chicken, raw pork, and prepared foods), thereby making food inventory cost dependent on the mix of products that each store sells. Second, there are substantive differences across the two measures. In particular, the correlation coefficient between reported profits and reported revenue minus expenses is low, between 0.38 and 0.47. Furthermore, 7.8 percent of the stores report negative revenue minus expenses in the baseline survey, while none report negative profits, as shown in Table H.6 of Appendix H.5. Third, while there is a close correlation between reported revenue and the best available estimate of actual revenue, constructed by multiplying each store's actual sales by one plus the markup implied by the average sales mix across all stores,[29] there is also evidence of substantial underreporting of revenue. A close examination of the distribution of reported and actual revenues in Table H.7 of Appendix H.6 reveals that store owners underreport sales by 19.2 percent on average in the baseline survey.[30]

Table 5 presents the regression results. As shown in Column (1), treatment increases reported profits by 102 USD (t-statistic=2.5), or 23.3 percent relative to the mean for the control group in the baseline survey. This result resists Anderson's sharpened q-value correction. Columns (2) through (4) report treatment effects that run in the expected directions but are not statistically significant for reported revenue, expenses, and revenue minus expenses, respectively. Importantly, the point estimate for the effect of the training program on operating expenses is negative, implying that the increase in sales did not heighten operating expenses.

The results in this and the previous section, which point to a significant increase in sales relative to their pre-trend coupled with a non-significant drop in expenses, are consistent with what is found when dissecting the training program's impacts on marketing and finance in Ap-

[28] These suggested pricing guidelines contemplate a 20 percent markup over the price charged to franchisees for raw chicken and pork and a 30 percent markup for cooked products. According to the baseline survey, 94 percent of the franchisees follow these pricing guidelines.

[29] The estimate of actual revenue has a strong predictive power over reported revenues (t-statistic=14.8) in an OLS regression, as shown in Figure H.7 of Appendix H.6.

[30] As elsewhere in the literature, underreporting is a potential consequence of individuals being sensitive about revealing how much they earn for tax purposes, but, in addition to taxes, feedback received in focus groups points to high extortion rates as a crucial concern for entrepreneurs (for references to the subject of extortion in the Northern Triangle, see Brown et al., 2021 and Estefan et al.,2022).

pendix H.7. Table H.9 shows that treatment increased the probability of implementing low-cost marketing tactics, such as running discount sales, calling clients by name, building client contact lists, making flyers, and taking client orders on WhatsApp. Table H.10 shows that treatment improved cost overseeing, by increasing the probability of keeping a monthly cash flow and inventory control.

Moreover, additional analysis conducted using survey data confirms that the most likely mechanism giving rise to this increase in self-reported profits is the one embedded in the theory of change. Alternative explanations are soundly ruled out, including an increase in weekly opening days and hours in Table H.11 and an increase in the number of store employees or the decision to sell homemade complementary products like salsas in Table H.12.

7.6 Treatment Effect Heterogeneity

Table 6 presents the results of the heterogeneity analysis, which focuses on the most relevant heterogeneity dimensions for each outcome. Beginning with training take-up, the table inspects heterogeneity by gender, educational attainment, age, and access to broadband internet. Column (1) shows that the take-up rate for women is 12.3 percentage points higher than the corresponding rate for men (t-statistic=1.66). Column (2) reports a difference of 14.8 percentage points between the take-up rate of high school-educated individuals and the corresponding rate for individuals with lower educational attainment (t-statistic=2). Column (3) reports a negative albeit non-significant difference of 14.8 percentage points in take-up rates between trainees aged 50 and older and younger trainees (t-statistic=1.5). Column (4) reveals a strongly significant difference of 53.3 percentage points in training take-up between individuals with broadband internet access and individuals without internet access (t-statistic=6.1).[31] Finally, Column (5) confirms the findings reported in the previous columns by simultaneously including the interactions of treatment with gender, high school education, broadband internet access, and age within a single regression.

Next, Columns (6) through (8) report heterogeneity in the effects of digital training on knowledge and the adoption of business practices. The table tests heterogeneous impacts by entrepreneurial ability first, using a three-tier system designed by CDPR to classify store owners.[32] Column (6) reports a negative difference of 0.066 index points in the effect of training on the index of knowledge and practice adoption between the low-performing tier and other

[31] Broadband internet access is defined using a dummy that indicates ownership of a smartphone with a data plan or the availability of a fixed broadband connection at home.

[32] This system classifies store owners based on their sales performance and compliance with franchising guidelines. Store owners in class A belong to the owners' group with the highest quality, owners in class B have intermediate quality, and owners in class C have the lowest quality.

groups (t-statistic=2.1).[33] Next, the table tests impact heterogeneity by previous business experience, as captured by a dummy indicating that the individual recently opened the CDPR franchise store, had never received previous formal business training, and had never operated another business. Column (7) shows a positive albeit non-significant difference of 0.059 index points in the effect of treatment on the index of knowledge and practice adoption between inexperienced and seasoned entrepreneurs (t-statistic=1.59). Column (8) confirms the findings from the previous two columns.

Finally, the table turns to test heterogeneity in sales and profits. Columns (9) and (10) test, respectively, whether the ability to realize higher sales and profits depends on receiving in-kind rewards. Both columns report no evidence of a heterogeneous gain for training participants who redeemed the in-kind rewards over the gains observed by other trainees.

8 One-on-One Interactions' Impact on Digital Engagement

This section investigates the effect of virtual business consulting meetings on trainee engagement with reproducible digital contents.[34] This analysis leverages data on the timing of digital engagement of training participants from the log file of the mobile app and data from the log books of consultants on the timing of the meetings. These data are used to investigate the impact of holding a virtual meeting with a professional business consultant on the probability of watching video capsules on a given date. To uncover causal effects, Section 8.1 proposes an instrumental variables (IV) strategy that utilizes time variation in the calendar availability of consultants as a source of exogenous variation in the timing of the consulting meetings to uncover their causal impact on digital content engagement.[35] Section 8.2 presents the results from implementing the IV strategy, which indicate that one-on-one interactions with business consultants have a strongly significant impact on engagement with the digital app contents.[36]

8.1 Empirical Strategy

To quantify the effect of business consulting meetings on an indicator for the decision of individual i to watch the video capsule c in the smartphone application at date t, denoted by W_{ict},

[33] This result is consistent with the "entrepreneurial capital" hypothesis (Maloney and Zambrano, 2022), which posits that practice adoption depends on the entrepreneur's ability to learn the applicability of the training content.

[34] This analysis was not laid out in detail in the AEA RCT registry.

[35] The empirical strategy follows from the descriptive analysis of both data sources, which reveals that the timing of the business consulting meetings closely correlates with the trainees' engagement with the app's video capsules, as described in Appendix I.1.

[36] Additional evidence in Appendix I.2 presents the results from analyzing the content of the consulting meetings' minutes using text-as-data techniques, revealing that the consultants' encouragement of trainees to watch the mobile app video capsules was the second most mentioned topic in their one-on-one meetings.

the parameter β from the following linear regression model is estimated via OLS:

$$W_{ict} = \alpha + M_{it}\beta + X_{it}\gamma + \delta_{i,dow(t)} + \lambda_{i,woy(t)} + \theta_{ct} + \varepsilon_{ict}, \tag{6}$$

where M_{it} is an indicator for participant i holding a business consulting meeting with a professional business consultant at t; X_{it} is an indicator for the event that the consulting company sent a text reminder to encourage completion at t; $\delta_{i,dow(t)}$ are individual-specific weekday fixed effects, which control for day-of-week effects that may affect engagement differently across individuals, such as weekend effects; $\lambda_{i,woy(t)}$ are week fixed effects, which control for week-of-year effects that may affect individuals differently, including holiday breaks; and θ_{ct} are capsule×date dummies, which control for capsule release dates and other time effects that may affect engagement differently across capsules over time. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level.

A key concern when estimating Equation (G.1) via OLS is omitted variable bias. If trainees face binding idiosyncratic shocks to busyness or time availability, they will be less likely to complete video capsules on the same dates as they hold business consulting meetings. The reason is that the opportunity cost of time will increase with the amount of time spent on the training program in a single day. Omitting these idiosyncratic shocks from the regression will bias the OLS estimate of β downward.[37] To address this concern, the paper uses an IV strategy which relies on time variation in the availability for business meetings from the business consultants side. In particular, an instrument $Z_{b(i),t}$ indicating whether the business consultant b assigned to trainee i has an open schedule for meetings at t is constructed. The identifying assumption of this empirical strategy is that consultant availability affects the probability of watching a video capsule c only through its impact on the probability of scheduling a business meeting at t.

8.2 Results

Table 7 presents the results from estimating Equation (G.1). Panel A shows the results from estimating the effect of holding a business consulting meeting on the probability of watching a video capsule via OLS. The estimate in Column (1) reveals a significant effect of 4.5 percentage points (t-statistic=22.5), which represents a more than fourfold increase relative to the probability of watching a video capsule on any given date, were such probability uniformly distributed across the 7 days of the 14 calendar weeks of the study period. Including

[37] Alternatively, if busyness shocks were heavily concentrated over time, training participants would be disproportionately more likely to hold business consulting meetings on the same dates as they watch video capsules, since the opportunity cost of an additional hour spent on training will be low for free days and high for busy days. In this case, omitting the idiosyncratic shocks from the regression will bias the OLS estimate of β upward.

a dummy for receiving a text message, individual×weekday and individual×week fixed effects, and date×capsule dummies in Columns (2) through (5), respectively, leaves the order of magnitude of the coefficient and significance levels largely unchanged.

Panel B presents the 2SLS estimates from the IV strategy described above. The estimate in Column (1) shows a significant effect of 13.8 percentage points (t-statistic=34.5) of holding a business consulting meeting on the probability of watching a video capsule on the same date, revealing that the OLS estimate is biased downward. This finding constitutes evidence that participants' busyness is evenly distributed across the calendar. Columns (2) through (5) show that the coefficient size and significance remain unaltered with the inclusion of a dummy for the reception of text reminders, individual×weekday and individual×week fixed effects, and capsule×date dummies, respectively.

Panels C and D present the first-stage and reduced-form equations, respectively. Column (1) of Panel C reveals a strongly significant first-stage estimate of 0.0796 (F-statistic=8,075.9), ruling out any potential concerns regarding the weak instruments problem. This estimate means that availability of the business consultant for a meeting on a given date increases the probability of holding a business meeting by 7.96 percentage points, an almost eight-fold increase relative to the mean probability that would be observed under a uniform distribution. This estimate remains large and significant after progressively including controls in Columns (2) through (5). Likewise, the reduced-form estimates, presented in Panel D, show that the availability of the assigned business consultant increases the probability of watching a video capsule by 1.1 percentage points on any given date, which is equivalent to a one-fold increase in the probability of watching a video capsule, were this probability uniformly distributed over time. These estimates remain roughly unchanged in size and significance after the inclusion of covariates in Columns (2) through (5).[38]

9 Cost-Effectiveness Analysis

A key potential advantage of delivering training programs digitally over doing so within a traditional classroom context is the promise of steep cost reductions. This section quantifies the CE ratio of the digital training intervention. The point estimate for the CE ratio of the digital training program is 2.3 dollars in profit for each dollar spent on training, even under the most conservative assumption.

Table 8 shows the results from the cost-effectiveness analysis of digital training. This analy-

[38] Panel C of Figure I.1 summarizes the calendar availability for meetings by business consultant. While business consultants have correlated availability (or lack thereof) during the December holiday period and weekends, their availability is spread on very different dates in November, early December, and early January.

sis compares the benefit of the program in terms of store profits with its financial cost. Panel A replicates the annualized effect on profits, obtained by multiplying by 12 the effect on monthly profits depicted in Column (1) of Table 5.

Panel B presents the intervention costs, obtained directly from the business agreement between IDB Invest and the local consulting company, and the opportunity cost of trainee time, defined as the profit value of the time spent completing the training program. To estimate per-capita intervention costs, the cost stipulated by the consulting firm for each business item is divided by 250, the contractual number of trainees initially agreed upon with the consulting company. These costs include the costs associated with the business consulting meetings; the costs of developing and maintaining the mobile app; and the costs of other measures implemented to increase take-up (i.e., tablet loans, text reminders, and digital money).

On the other hand, the opportunity cost of time is estimated by multiplying the time requirement of all training components by the average hourly profits of the stores in the experimental sample in the baseline survey. The time requirements of the training program include 67 minutes of video capsules, 90 minutes of business consulting meetings, and 6.5 hours of workbook exercises. Average monthly profits in the baseline survey are 459 USD, and the weekly number of store opening hours is 70, which implies 280 opening hours per month. Dividing 459 USD by 280 hours, and multipying the resulting number by 9.1 hours yields 14.9 USD as the opportunity cost of time of the training program per trainee.

The cost-effectiveness of the intervention is reported under alternative assumptions regarding the extent to which the consulting meetings and the mobile app video capsules are indispensable to induce positive treatment effects on knowledge, business practices, sales, and profits. Panel C presents the CE ratio and its corresponding 95% confidence intervals under these alternative costing assumptions. Assumption 1 incorporates all training costs and is the most conservative. It implicitly assumes that both training components (i.e., the virtual meetings with business consultants and the app video capsules) are necessary to induce positive treatment effects on profits. Assumption 2 excludes the costs associated with the mobile app, which include the development of a standardized training program, video capsules, and system maintenance. This assumption is the second most conservative, as it implicitly assumes that the observed training effects arise exclusively from the tele-meetings of training participants with business consultants. Finally, Assumption 3 excludes the costs associated with business consulting meetings, which include a consulting workplan, a training promotional campaign, the individual-level diagnostics of business consulting needs, the piloting of business consulting meetings, and the consulting meetings. This assumption is the least conservative, as it implicitly assumes that the treatment effects arise exclusively through the online training materials offered by the mobile app. This assumption is the most optimistic and should be used as an

upper bound to the CE ratio of digital business training.

10 Conclusion

This paper studied the impacts of digital business training coupled with business consultant services on the knowledge, business practices, store sales, and profits of franchisees from a large retail chain in the food sector of Guatemala. It found that digital training improves knowledge and business practices, increases store sales relative to their pre-trend, and boosts self-reported profits. When zooming into the effects on business practices, it found that digital training is particularly successful in inducing the adoption of marketing, finance, and inventories practices through a betterment of the franchisees' knowledge level. In contrast, it fails to find impacts on operations and time management. Then, the paper investigated heterogeneous effects, finding that general program flexibility, access to broadband internet, and trainee initial business experience and entrepreneurial ability are key determinants of treatment effectiveness. It then turned to examine the role of one-on-one consulting meetings in explaining the observed effects and found that they play a central role in incentivizing engagement with digital materials and preventing dropout. Finally, the paper showed that the CE ratio of the digital training program is higher than the corresponding ratio of the best traditional in-person program in the literature.

The results of this paper have fundamental policy implications. First, they offer insights about the extent to which digital training programs constitute effective instruments to transfer human capital and business skills for the betterment of management practice in developing countries. These insights are particularly important given that skill transfer will likely gain relevance in the future as technological change and shifts in international openness to trade lead to labor displacement.[39] Second, while the policy promise of online training programs for adults is an active area of research in the U.S. (Bonvillian, 2020; Osterman, 2020), the results in this shed light into the effectiveness of online training programs for adults in contexts where technology access is lower than in advanced economies.

While this paper relies on experimental evidence, there are several limitations to the reported findings. First, store homogeneity aided in finding positive impacts, by cancelling variation in business outcomes related to the economic sector and the type of activities performed

[39] See Acemoglu and Restrepo (2019) and Autor (2018) for useful summaries on the labor-displacing effects of trade and automation in the U.S. Fewer papers examine labor displacement in developing countries. Dix-Carneiro (2019) provides evidence that openness to trade in Brazil resulted in a shift from formal employment to the informal sector. A recent paper by Korinek and Stiglitz (2021) argues that new technologies like AI threaten to reverse the economic gains experienced by developing countries and emerging markets in the past half century by reducing labor demand for unskilled labor.

across establishments, which is typically present in the business training literature. However, the attractiveness of this local context does not come without costs, as the validity of the paper's findings may not extend to other settings. In particular, high program take-up rates and effort put into the program may result from the accountability to which franchisees are held by the franchisor. Second, the heterogeneity analysis suggests that the cost-effectiveness of digital training crucially depends on broadband internet access, internet affordability, and digital literacy, which may be lower in other geographical regions, particularly in Sub-Saharan Africa.

Despite these limitations, the findings of this study are encouraging, as they suggest that digital delivery can be particularly useful in transferring practical business knowledge and bridging the TFP gap between developing countries and advanced economies. Furthermore, they highlight the fundamental role of one-on-one interactions in driving trainee persistence rates, engagement with digital contents, and the adoption of better business practices. Future research should center on figuring out the optimal frequency and type of one-on-one interactions and the design of reproducible training materials that maximizes digital engagement and practice adoption.

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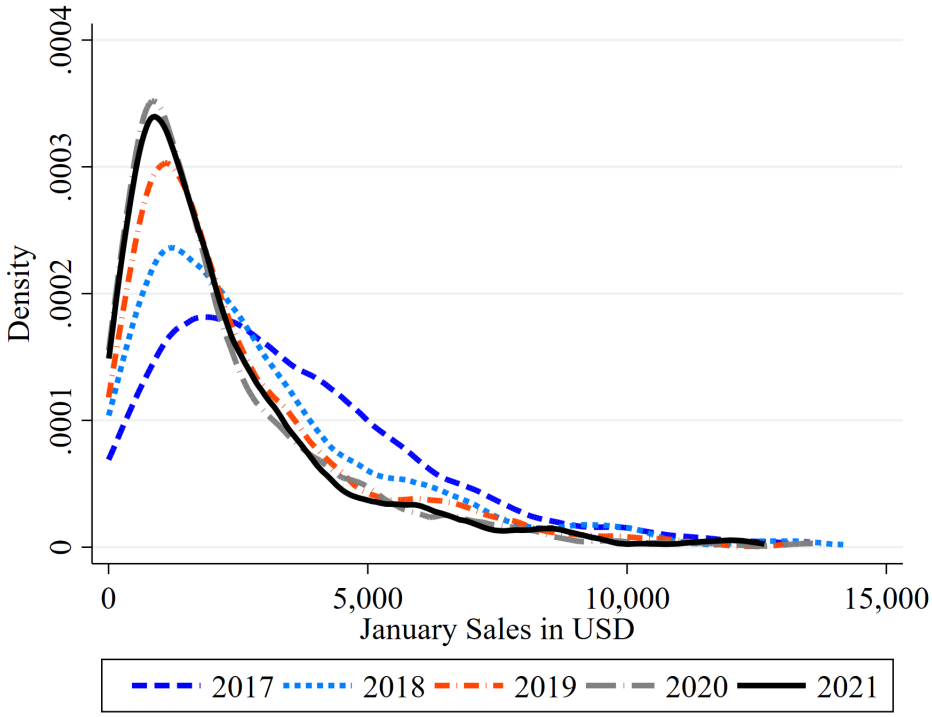
Figures

Figure 1: The Distribution of Sales, 2017-2021



Source: Authors' analysis based on sales records from *Casas de Pollo Rey* (CDPR) from 2017 to 2021.
Note: Stores are the units of observation. As described in Section 2, the sales distribution is skewed to the right and has shifted leftward every year since 2017.

Tables

Table 1: Balance of Outcome and Control Variables Prior to Treatment

	Control			Treatment			*p*-value
	N	Mean	S.E.	*N*	Mean	S.E.	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Panel A. Outcomes at the Store Owner Level						
Exam Score	247	.563	.009	251	.578	.009	.214
Marketing Index	247	.629	.015	251	.633	.014	.835
Finance & Inventories Index	247	.731	.014	251	.733	.015	.912
Operations Index	247	.615	.008	251	.636	.009	.083
Time Management Index	247	.727	.021	251	.721	.021	.85
Total Practices Index	247	.708	.01	251	.705	.009	.814
Class A	247	.142	.022	251	.139	.022	.942
Class B	247	.506	.032	251	.506	.032	.998
Class C	247	.352	.03	251	.355	.03	.956
Central	247	.401	.031	251	.394	.031	.885
West	247	.417	.031	251	.418	.031	.976
East	247	.182	.025	251	.187	.025	.885
New Entry	247	.457	.032	251	.466	.032	.847
Owner Age	247	38.2	.669	251	38.0	.708	.797
Owner is Female	247	.709	.029	251	.693	.029	.71
Completed Secondary School	247	.599	.031	251	.665	.03	.126
Married	247	.551	.032	251	.554	.031	.943
Previously Owned a Business	247	.462	.032	251	.47	.032	.848
Previously Received Training	247	.304	.029	251	.259	.028	.269
Owns a Smartphone	247	.907	.019	251	.924	.017	.486
Has WiFi at Home	247	.7	.029	251	.673	.03	.515
	Panel B. Outcomes at the Store Level						
Sales (July 2021)	266	2,710.5	150.1	273	2,907.9	158.5	.366
Sales (August 2021)	266	2,637.7	144.3	273	2,816.7	152.7	.395
Sales (September 2021)	266	2,512.6	136.8	273	2,694.7	146.2	.364
Sales (October 2021)	266	2,547.4	144.8	273	2,719.2	148.6	.408
Self-Reported Revenue	222	2,735.4	424.5	229	2,571.1	162.4	.718
Self-Reported Costs	224	781.3	77.9	228	912.9	85.6	.256
Self-Reported Profits	207	437.1	36.3	205	497.2	38.5	.257

Source: Data for this table comes from the baseline survey of the experiment. Monthly sales data at the store level comes from the administrative records of *Casas de Pollo Rey* (CDPR).
Note: As discussed in Section 7.1, this table shows evidence of balance in key outcome variables prior to treatment between the treatment and the control group. Actual sales of stores that have exited the market are coded as zero. The observation counts for self-reported business outcomes at the store level from the baseline survey are lower than those for store-level sales from the administrative records because several owners refuse to report their stores' financial information in the baseline survey.

Table 2: Differential Attrition Analysis by Treatment Status

	Attrited	Closed	Business Changed	Owner Name Changed	Store Code Changed
	(1)	(2)	(3)	(4)	(5)
			Panel A. Store Owners		
Treatment	-0.000	0.013	0.003		
	(0.026)	(0.023)	(0.022)		
R-squared	0.095	0.130	0.000		
Control Mean	0.097	0.069	0.061		
Observations	498	498	498		
			Panel B. Store Sales		
Treatment	-0.013	-0.004	0.009	0.006	-0.024
	(0.031)	(0.015)	(0.022)	(0.015)	(0.028)
R-squared	0.080	0.087	0.075	0.054	0.063
Control Mean	0.158	0.034	0.056	0.023	0.045
Observations	539	539	539	539	539

Source: Data on attrition at the store owner level comes from the follow-up survey of the experiment. Data on attrition at the store level comes from the administrative records of *Casas de Pollo Rey* (CDPR).
Note: As discussed in Section 7.2, each column in this table presents the results from an Ordinary Least Squares (OLS) regression of a different attrition measure on a treatment dummy. In Column (1), attrition at the store owner level is defined as a dummy for failing to complete the follow-up survey, while attrition at the store level is defined as a dummy for missing sales data in June 2022. In Column (2), the outcome is a dummy for having attrited the sample because the owner closed her store. A dummy for having attrited the sample because the owner established a different business in the same location is the outcome variable in Column (3). The outcome in Column (4) is a dummy for attriting the sample because the name of the legal owner of the store changed to avoid personal income taxation. Finally, the outcome in Column (5) is a dummy for changing the store code due to store relocation or for fiscal purposes, such as avoiding corporate or payroll taxation. Standard errors within parentheses are robust to heteroskedasticity of unknown form in Panel A and are also clustered at the store owner level in Panel B. All regressions control for strata dummies.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 3: The Effects of Digital Training on Take-Up, Knowledge, and Business Practices

	Take-Up	Knowledge & Business Practices					
		Exam Score	Marketing	Finance & Inventories	Operations & Training	Time Management	Knowledge & Practices Index
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.504***	0.029**	0.069***	0.047**	0.002	-0.029	0.050***
	(0.034)	(0.012)	(0.021)	(0.022)	(0.013)	(0.030)	(0.015)
Sharpened q-value		[0.073]	[0.005]	[0.107]	[0.858]	[0.659]	[0.005]
R-squared	0.376	0.106	0.145	0.085	0.063	0.102	0.146
Control Mean at Baseline	0.000	0.563	0.629	0.731	0.615	0.727	0.708
Observations	450	450	450	450	450	450	450

Source: Data for this table comes from the follow-up survey of the experiment.
Note: As discussed in Section 7.3, this table presents the Intention-to-Treat (ITT) impact estimates of digital training on the store owners' business practices. The outcome variable in Column (1) is a dummy for having graduated from the training program. Column (2) uses the score in an 11-item business knowledge test as an outcome. The exam items are described in the module titled "Knowledge of Best Business Practices" of the survey located in Appendix E. Columns (3) through (6) use the proportion of business practices adopted by the store owners in each category as an outcome. Table F.1 in Appendix F details these practices. The outcome variable in Column (7) is the overall index of knowledge and business practices. All regressions control for strata dummies. Standard errors within parentheses are robust to heteroskedasticity of unknown form. Anderson's sharpened q-values that correct for multiple hypotheses testing are enclosed within square brackets.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 4: The Effects of Digital Training on Store Sales

	All Stores	Balanced Panel	Excluding Multi-Store Owners
	(1)	(2)	(3)
	Panel A. Differences-in-Differences		
Treatment × Post	158.7∗	220.7∗	231.0∗∗
	(94.2)	(117.1)	(106.9)
R-squared	0.211	0.241	0.231
Control Mean in October 2021	2,606.2	3,045.1	2,407.1
Number of Stores	539	335	463
Number of Months	25	25	25
Missing observations because:			
Store Had Not Entered	342	0	309
Store Had Exited	1,132	0	970
Observations	12,001	8,375	10,296
	Panel B. ANCOVA		
Treatment	207.2∗	280.7∗∗	304.2∗∗
	(118.3)	(132.6)	(132.5)
R-squared	0.866	0.875	0.856
Control Mean in October 2021	2,596.2	2,979.7	2,396.3
Number of Stores	498	382	428
Number of Months	12	12	12
Missing observations because:			
Store Had Not Entered	0	0	0
Store Had Exited	578	0	495
Observations	5,398	4,584	4,641

Source: Data for this table comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample from December 2020 to December 2022.
Note: This table presents the impacts of digital training on store sales in the sample, as discussed in Section 7.4. The balanced sample includes stores that remained open from December 2020 to December 2022, six months after the experimental follow-up survey. Controls in the differences-in-differences specifications include store fixed effects, time dummies, municipality-specific time trends, and time trends that depend on initial store sales. Controls in the ANCOVA specifications include 12 rounds of baseline sales, dummies for missing sales for each baseline round, municipality-specific time trends, and time trends that depend on initial store sales. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 5: The Effects of Digital Training on Self-Reported Business Outcomes

	Profits	Revenue	Costs	Revenue–Cost
	(1)	(2)	(3)	(4)
Treatment	102.0**	14.8	-21.4	39.2
	(40.8)	(223.3)	(103.9)	(206.1)
Sharpened q-value	[0.0496]	[1.000]	[1.000]	[1.000]
R-squared	0.159	0.204	0.074	0.195
Control Mean at Baseline	437.1	2,735.4	781.3	2,003.0
Total Stores	539	539	539	539
Unreported Outcome	68	37	26	44
Observations	471	502	513	495

Source: Data for this table comes from the follow-up survey of the experiment.
Note: This table presents the Intention-to-Treat (ITT) impact estimates of digital training on self-reported business outcomes at the store level, as discussed in Section 7.5. The estimating sample in each regression consists of all stores for which the owner reports the outcome variable at endline, including zeros. All regressions control for strata dummies. Standard errors within parentheses are robust to heteroskedasticity of unknown form and are clustered at the store owner level. Table H.1 of Appendix H.2 tests the statistical robustness of the impact on profits for different estimating samples.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 6: Treatment Effect Heterogeneity

	Treatment Take-Up					Knowledge & Practices Index			Sales	Profits
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Treatment	0.417***	0.554***	0.525***	0.518***	0.462***	0.072***	0.038**	0.060***	212.9*	111.1*
	(0.062)	(0.041)	(0.037)	(0.034)	(0.065)	(0.019)	(0.018)	(0.020)	(127.5)	(59.0)
Interaction of Treatment with:										
Female	0.123*				0.159**					
	(0.074)				(0.074)					
No High School		-0.148**			-0.144**					
		(0.073)			(0.073)					
Older than Fifty			-0.141		-0.062					
			(0.097)		(0.104)					
No Internet Access				-0.533***	-0.545***					
				(0.066)	(0.090)					
Low-Performing						-0.066**		-0.073**		
						(0.032)		(0.033)		
No Experience							0.059	0.069*		
							(0.037)	(0.036)		
Redeemed Rewards (USD)									-1.625	-0.279
									(2.043)	(1.011)
R-squared	0.380	0.388	0.383	0.394	0.415	0.155	0.151	0.161	0.211	0.159
Control Mean at Baseline	0.000	0.000	0.000	0.000	0.000	0.708	0.708	0.708		437.2
Control Mean in October 2021									2,684.2	
Observations	450	450	450	450	450	450	450	450	12,001	471

Source: Data for this table, except for store sales, comes from the follow-up survey of the experiment. Store sales data comes from the administrative records of *Casas de Pollo Rey* (CDPR).
Note: This table presents the results from the analysis of heterogeneous treatment effects along a selected set of covariates, as explained in Section 7.6. Coefficients in Columns (1) through (5) are comparable to the coefficient in Column (1) of Table 3, as they use the same outcome variable, controls, and estimating sample. Coefficients in Columns (6) through (8) are comparable to the coefficient in Column (7) of Table 3. The coefficients in Column (9) are comparable to the coefficient in Column (1) of Panel A of Table 4. Finally, the coefficient in Column (10) is comparable to the coefficient in Column (1) of Table 5. Standard errors within parentheses across all columns are robust to heteroskedasticity of unknown form. Additionally, standard errors in Columns (9) and (10) are clustered at the store owner level.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 7: The Effect of Consultant Interactions on App Engagement

	(1)	(2)	(3)	(4)	(5)
			Panel A: OLS Estimates		
Consultant Meeting	0.0445***	0.0437***	0.0431***	0.0371***	0.0363***
	(0.007)	(0.007)	(0.007)	(0.007)	(0.007)
R-squared	0.0054	0.0058	0.0246	0.0627	0.0857
			Panel B: 2SLS Estimates		
Consultant Meeting	0.138***	0.135***	0.115***	0.099***	0.115***
	(0.011)	(0.012)	(0.012)	(0.016)	(0.018)
			Panel C: First-Stage Estimates		
Consultant Availability	0.0796***	0.0781***	0.0955***	0.0893***	0.0892***
	(0.004)	(0.004)	(0.004)	(0.003)	(0.004)
F-Statistic (Excluded Instrument)	337.2	314.2	719.6	682.1	475.4
R-squared	0.0611	0.0622	0.1408	0.2129	0.2203
			Panel D: Reduced-Form Estimates		
Consultant Availability	0.011***	0.011***	0.011***	0.009***	0.010***
	(0.001)	(0.001)	(0.001)	(0.001)	(0.002)
R-squared	0.0032	0.0035	0.0222	0.0605	0.0837
Text Message Dummy	N	Y	Y	Y	Y
Individual × Weekday FEs	N	N	Y	Y	Y
Individual × Week FEs	N	N	N	Y	Y
Date × Capsule Dummies	N	N	N	N	Y
Number of Weeks	14	14	14	14	14
Week Days	7	7	7	7	7
Number of Capsules	28	28	28	28	28
Number of Subjects	166	166	166	166	166
Observations	455,504	455,504	455,504	455,504	455,504

Source: Data on video capsule completion comes from the log file of the mobile app. The dates of the business consulting meetings and the calendar availability of consultants come from the log books kept by the consultants.
Note: This table presents the impact of holding a business consulting meeting on the probability of watching a video capsule on the same date for the training subjects in the treatment group, as discussed in Section 8.2. Each observation is a trainee×capsule×date triplet. Panel A presents the Ordinary Least Squares (OLS) regression estimates, while Panel B shows the second-stage estimates from the Instrumental Variables (IV) strategy, calculated via Two Stage Least Squares (2SLS). The first-stage and reduced-form estimates from the IV strategy are reported in Panels C and D, respectively. The dependent variable is an indicator of trainee i's viewership of the video capsule c at date t in Panels A, B, and D, while an indicator for the event that trainee i holds a consulting meeting at t is the dependent variable in Panel C. The "Text Message Dummy" control is an indicator for the event that the consulting company sent a text reminder to encourage video capsule completion to i at t. Standard errors within parentheses are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table 8: Cost-Effectiveness Analysis

	USD
	(1)
Panel A. Per Capita Benefit	
Annualized Effect on Profits	1,224.1
	[264.5, 2,183.7]
Control Mean at Baseline	5,245.4
Panel B. Per Capita Cost	
Consulting Workplan	22
Texting & Training Promotional Campaign	39.6
Diagnosis of Business Consulting Needs	57.2
Training Program Content Development	30.8
Mobile App Development and Maintenance	50.6
Piloting Business Consulting Meetings (15 Trainees)	52.8
Consulting Meetings	187
Digital Money (Completion Incentives)	72
Tablet Loans	8
Graduation Certificates and Gifts	2
Opportunity Cost of Trainee Time	14.9
Total Cost	536.9
Panel C. Cost-Effectiveness Ratio	
Assumption 1: All Costs	2.3
	[.6, 4.1]
Assumption 2: No Mobile App Cost	2.8
	[.6, 5]
Assumption 3: No Consulting Cost	7.5
	[1.6, 13.4]

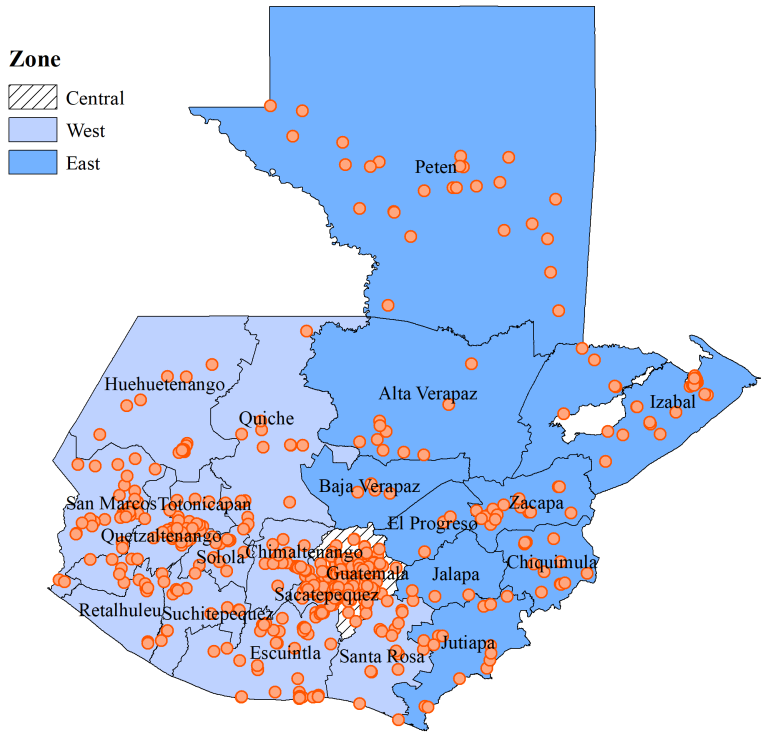
Source: Data on self-reported profits comes from the follow-up survey of the experiment. Data on the intervention's costs comes from the business agreement between IDB Invest and the consulting company. Data used to calculate the opportunity cost of time comes from self-reported profits from the follow-up survey and estimated time requirements of the training program provided by the consulting company.
Note: As discussed in Section 9, this table presents the results of the cost-effectiveness analysis. Panel A presents the point estimate and 95% confidence interval for the annualized per capita effect of digital training on store profits, calculated by multiplying the estimate in Column (1) of Table 5 by 12. The sample used to obtain this estimate consists of all stores for which the owner reports the outcome variable at endline, including zeros. Panel B presents the per capita costs of the training program by expense item. These costs are calculated by dividing each expense item bill by 250, the contractual number of trainees initially agreed upon with the consulting company. Panel C presents the cost-effectiveness ratio and its corresponding 95% confidence interval under different costing assumptions. Assumption 1 incorporates all training costs; Assumption 2 excludes the costs associated with the mobile app, which include the development of a standardized training program, video capsules, application development, and system maintenance; and Assumption 3 excludes the costs associated with the business consulting meetings, which include the rest of the expense items in the table.

Supplementary Appendix: For Online Publication Only

This appendix contains additional information and analyses. Appendix A shows the geographical location of all CDPR stores, a picture of the model store, and a detailed list of the products offered in CDPR franchises. Appendix B presents a detailed description of each training module's contents, duration, and training materials. Appendix C presents the summary statistics for all the data sources in the paper. Appendix D provides further details regarding the randomization procedure, including a test for the representativity of the experimental sample, the stratification groups, and the timeline for the experimental intervention. Appendix E contains the baseline and follow-up survey of the study. The construction of the business practices indexes is detailed in Appendix F. Suggestive evidence of the impact of text reminders on the timing of video capsule completion is presented in Appendix G. Appendix H contains additional analysis pertaining to sales and profit impact estimation. Finally, the results from the analysis of the business consulting meetings' textual content are presented in Appendix I.

A CDPR Stores and the List of Products

Figure A.1: Geographical Location of All CDPR Stores in Guatemala



Source: Authors' analysis based on the administrative records of *Casas de Pollo Rey* (CDPR).
Note: This map presents the geographical location of all 752 stores in Guatemala in November 2020 by the highest administrative demarcation level, called *departamento*. Each green dot represents a different store. As mentioned in Section 2, 317 stores were located in the central region, 305 in the west zone, and 130 in the east. Only 87 stores were located in the municipality of Guatemala City, within the central region.

Figure A.2: CDPR Model Store

Source: Franchise owner manual of *Casas de Pollo Rey* (CDPR).
Note: This figure shows CDPR's model store described in Section 2. All new franchise owners receive this picture, which depicts the ideal layout of the refrigeration equipment and all store promotional materials. Franchise owners receive all 7 items highlighted in this picture. Key: 1 is a menu board, 2 is the sales offerings board, 3 is a horizontal freezer, 4 is the outside banner, 5 is a horizontal refrigerator, 6 is the poster, and 7 is a vertical freezer.

Table A.1: List of Products Sold in CDPR Stores

Type of Product	Product Name
Indispensable Products	Whole White Chicken
	Whole Yellow Chicken
	White Breast with Bone
	Yellow Breast with Bone
	Frozen White Leg
	Yellow Parts, Mixed
	Chicken Milanese
	Barbeque Wings
	Nuggets
	Crispy Chicken Breast Nuggets
	Boneless Wings
	Hot dogs
	Sliced Ham
	Sliced Pork
	Sliced Pork
	Round Roast
	Pork Tenderloin
	Ribs
	Sliced Pork Chop (bagged)
Complementary Products	Chicken Creole (1 unit, bagged)
	Whole Chicken, small
	Separated Chicken Breast Filets (1 lb.)
	Yellow Boneless Chicken Breast
	Sliced Boneless Chicken Breast
	Boneless Chicken Breast (2 lb.)
	Yellow Chicken Legs (Bagged) 10 lbs.
	Chicken Leg Filet, Tropical Spiced (1 lb.)
	Chicken Leg Filet, Lemon Pepper (1 lb.)
	Ground Beef Pollo Rey
	Yellow Giblets (5 lb.)
	Gizzard (2 lb.)
	Chimichurri Chicken Leg Filet (1 lb. bag)
	Potatoes (5 lb. bag)
	Pork Rinds
	Chicken Foot Bone (bagged)
	Round Roast (bagged)
	1/2 Pork Tenderloin
	Pork churrasco (1 lb.)
	1/2 CDPR Tenderloin
	Pork Milanese (1 lb.)

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Table A.1: List of Products Sold in CDPR Stores (continued from previous page)

Type of Product	Product Name
	Cut Chicken Leg
	Marinated Meat (460 G)
	Dried Marinated Meat (10 lb.)
	Ground Meat Special (460 G)
	Ground Choriza Special (460 G)
	Pork Lard
	Barbeque Wings (200 G)
	Barbeque Wings (400 G)
	Smoked Pork Chop (2300 G/5 lb.)
	Crispy Chicken Breast Nuggets (400 G)
	Smoked Chicken Leg (bagged)
	Smoked Chicken
	Pancakes Pollo Rey (1375 G/25 units)
	Pancakes Pollo Rey (220 G/4 units)
	Boneless Wings (400 G)
	Pressed Meat (460 G)
	Red Chorizo (230 G/10 units)
	Red Chorizo (460 G/12 units)
	Pressed Ham (230 G)
	Creole Sausage (230 G)
	Creole Sausage (460 G/12 units)
	Pate (115 G)
	Cooked Salami (230 G)
	Cocktail Sausages (460 G)
	Chicken Sausage (400 G)
	Hot dogs (460 G)
	Frankfurt-style Sausages (460 G)
	Turkey Sausage (Special) (260 G)
	Sliced Turkey (230 G)
	Sliced Ham (95 G)

Source: Franchise owner manual of *Casas de Pollo Rey* (CDPR).
Note: This table provides a detailed list of all the *Corporación Multi Inversiones* (CMI) products sold in CDPR stores, as mentioned in Section 2. Products are classified into two categories: indispensable and complementary. Products in the indispensable category must be sold in all franchise stores, while franchise owners can decide which products to offer from the list of complementary products.

B Training Materials

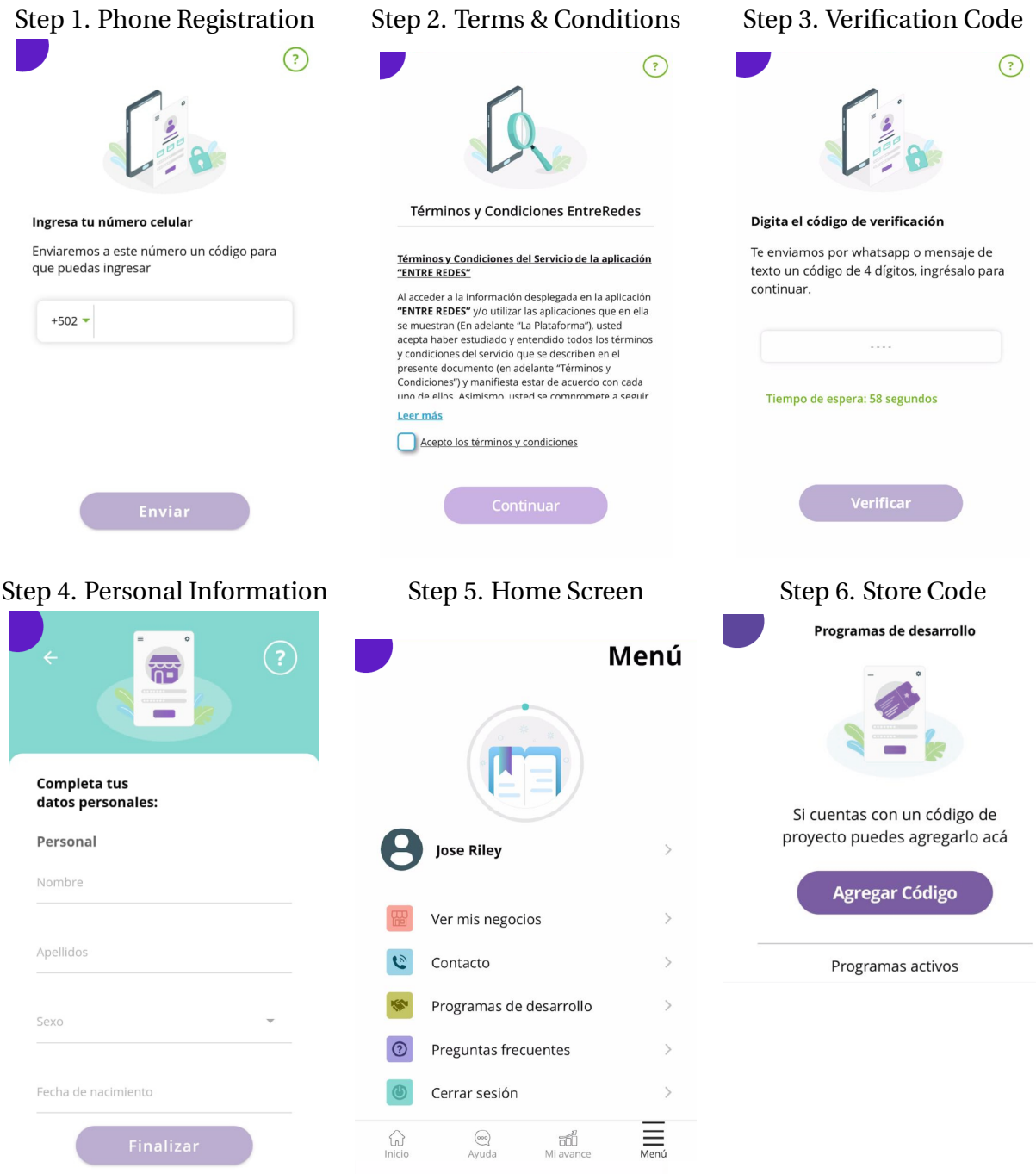
Figure B.1: Video Capsules Content Examples

Panel A. Heurisitic Guidelines

Panel B. Formal Concepts of Business Administration

Source: Screenshots of selected video capsules developed by the consulting company for the training program.
Note: This figure presents two examples of the content included in the training program's video capsules. As described in Section 3, video capsules focus on a combination of heuristic guidelines and formal business administration concepts. Panel A of this figure shows a screenshot of the module on equipment maintenance, which suggests a freezer temperature between -18 and -8 °C for the freezer and between 0 and 4 °C for the refrigerator. Panel B presents a screenshot of the Reorder Point module, which explains the formula for the Reorder Point calculation, as an example of a formal business administration concept.

Figure B.2: Mobile Application Registration Steps

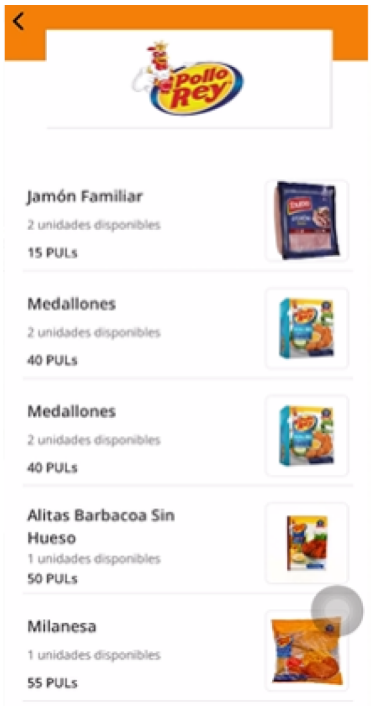


Source: Screenshots of the mobile application's registration procedure.
Note: As mentioned in Section 3, this figure presents the steps that training participants must have followed to register in the online application. Training participants must first have provided their mobile number, accept the terms and conditions of the training application, and verify that the mobile number they provided is indeed their phone number. Then, they must have declared their personal information and type in their store code. Only when their store code was part of the treatment group, they could gain access to the training program materials. Store codes are unique and confidential, as they can be used by store owners to retrieve their financial information from CMI. Thus, it is unlikely for members of the control group to gain access to the training program and contaminate the treatment group.

Figure B.3: Incentives for Training Module Completion

Panel A. Unlocked Training Modules

Panel B. In-Kind Rewards



Source: Screenshots of the mobile application's list of unlocked training modules and redeemable in-kind rewards.
Note: This figure presents the incentives provided for participants to complete the training modules. As discussed in Section 3, Panel A of this figure shows that participants can only complete the unlocked training modules, signaled with a check mark. Training modules are unlocked after watching all previous video capsules and answering all knowledge questions of earlier modules. Panel B shows that, once training participants complete a training module, they see a screen message detailing the inventories they can purchase using the digital money they earned.

Table B.1: Description and Monetary Value of the In-Kind Rewards

Product Name	Weight in Pounds	Units	Total Value in USD
Chicken Nuggets	2.2	2	7.8
Chicken Milanese	3.3	1	9.7
Smoked Pork Chop	5.0	1	9.7
Whole Yellow Chicken	3.5	3	13.6
Sliced Ham	0.9	2	3.2
Barbeque Wings	3.0	2	18.2
Boneless Wings	3.0	1	7.9
Total	26.1	12	70.2

Source: Authors' analysis with data from *Casas de Pollo Rey* (CDPR).
Note: This table presents the product description and monetary value of the in-kind rewards that training participants could redeem using the digital money they earned, as described in Section 3.

Table B.2: Training Program Module Description

Module no.	Theme	Objective	Content summary
0	Welcome to the training program	Give a welcome to the formational program for franchise store owners from representatives of the CMI corporation.	In this module, executive representatives of CMI welcome all training program participants to the formational program.
1	Key operational activities at the point of sale	Help training participants find the main activities of their franchise stores and assign responsibilities as well as periods of goal execution for each of them.	This module divides key operational activities into Purchasing, Sales, and Administration, and outlines key activities and goals that should be completed in each category. Concerning administration, it details best practices in planning, directing, and organizing a business as well as the importance of setting business objectives.
2	Picture of Success	Present franchise hygiene standards, the ideal arrangement of store equipment, and the portfolio of products offered by CDPR.	The Picture of Success shows a series of photos outlining the ideal set up of a CDPR branch, including refrigerator and freezer layouts as well as a general store layout. It also describes best practices in cleanliness and organization.
3	Patrimonial security	Motivate store owners to implement actions to protect their business assets and collaborators' personal security in the opening, execution, and closing of daily operations.	This module emphasizes the importance of good security practices and provides safety and security recommendations for the three critical periods of daily operation: the opening, execution, and closing of business.
4	Operational planning	Explain how to design an operational plan to ensure that the store's daily operations reach the goals and benchmarks set by the owner.	This module instructs franchise owners to write an operational plan, including the definition of tangible goals, strategies comprised of specific actions, deadlines for each activity, and the responsibilities of each business team member.
5	Value Added	Introduce store owners to the concept of Value Added, help them identify the Value Added offered by their store, and create a plan of action that allows them to improve it.	This module introduces the concept of value added and encourages franchise store owners to think about the value added they offer over their competition. It presents ideas for increasing value added before, during, and after sale and explains that the cost of these programs is an investment in future clients and sales rather than an expense.
6	Relationship with clients	Teach store owners to build relationships with clients based on trust and provide incentives to form loyal customers.	In this module, franchise store owners are offered 10 strategies to improve sales by building relationships with clients. It describes strategies to generate trust and ways to provide incentives for customers to come back. It also describes the importance of evaluating client satisfaction and adjusting business practices based on client feedback.

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Table B.2: Training ProgramModule Description (continued from previous page)

Module no.	Module number	Objective	Content summary
7	Training business team members	Emphasize the importance of training store employees to improve business performance.	This module explains five steps to effective worker training: explaining business goals and strategies, ensuring all workers have a high level of knowledge of products and protocols, increasing awareness of the value of CDPR versus its competitors, providing an understanding of sales and marketing strategies, and allowing workers to capitalize on the personal benefits of being a part of CDPR.
8	Marketing through sales promotions and advertising	Familiarize franchise store owners with concepts like marketing, target market, publicity, and sales promotions, as well as steps to generate high-impact sales promotions.	This module lays out the steps to creating a marketing plan. It introduces the concept of a target market, identifies 3 central marketing strategies, and lays out 7 steps to creating successful sales promotions.
9	Using WhatsApp to communicate with clients	Motivate training recipients to use WhatsApp to maintain commercial communications with their clients, recognize its benefits, and apply use recommendations.	This module introduces best practices in using WhatsApp to offer sales promotions and maintain contact with customers. It points out the benefits of utilizing WhatsApp as a platform for digital communication.
10	Freezing and cooling equipment maintenance	Improve freezing and cooling equipment maintenance practices.	This module outlines the importance of properly maintaining cooling and freezing equipment and provides general care recommendations as well as guidelines for cleaning equipment on a weekly and daily basis.
11	The benefits of accepting orders and making deliveries	Describe the benefits of accepting customer orders online or by telephone and making home deliveries.	This module describes the benefits of running a home order and delivery system, including increasing customer loyalty and resilience of the business in times of crisis, like the COVID-19 pandemic. It also emphasizes the importance of timely and accurate delivery requests from store owners to the CMI corporation to ensure product availiabilty.
12	Food safety	Introduce the best food safety practices, from the reception of products to their conservation and maintenance.	This module explains the importance of proper maintenance of perishable products and outlines best practices in food conservation and cleanliness applied to the specific case of a CDPR branch. It summarizes with 10 commandments for successful food preservation.
13	Business budgeting and financial planning	Guide store owners on how to budget and forecast sales, costs, and expenses to improve financial decision-making.	In this module, franchise store owners are instructed on how to create a monthly budget and estimate low, moderate, and high sales for various categories within their business.

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Table B.2: Training ProgramModule Description (continued from previous page)

Module no.	Module number	Objective	Content summary
14	Family budget planning	Suggest the creation of a family budget to direct resources toward established goals.	This module advises franchise owners to create a monthly family budget by defining monthly fixed costs and annual expenses to direct household resources toward concrete financial goals.
15	The Contribution Margin	Introduce the Contribution Margin indicator, a highly utilized accounting identity to measure the profitability of each product sold in the store.	This module introduces the Contribution Margin indicator and explains that this indicator helps store owners keep track of the products with the highest and lowest profitability in the store. Knowledge of the Contribution Margin allows store owners to set better product prices.
16	Introduction to inventory management	Provide an introduction to the best inventory management practices to avoid shortages and excess products.	This module instructs training participants to inspect their physical inventories, best-by dates, and any losses or deterioration of products. It introduces training participants to the ABC inventory management method. Additionally, the module explains the importance of inventory management in forecasting future demand, preventing excessive inventories, monitoring inventory quality, and ensuring the store receives exact product amounts from CMI.
17	Stock control	Present the concept of stock control to help store owners keep track of how much stock they have at any one time.	This module describes how to keep track of inventories using log books to periodically record, among other variables, the minimum and maximum stock of each product. The module explains that the main aim of store control is to ensure that the store keeps the optimal amount of each product in the store at any moment in time.
18	Reorder Point	Help participants calculate the Reorder Point indicator to ensure they make orders to CMI at the right time and have a sufficient supply of products in the store.	This module explains how to calculate the Reorder Point (ROP), defined as the level of inventory that triggers the action to replenish a particular inventory stock. It mentions that the ROP indicator is usually calculated with the aim of reducing the risk of stockout.

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Table B.2: Training ProgramModule Description (continued from previous page)

Module no.	Module number	Objective	Content summary
19	The benefits of taking digital payments	Explain the existing digital payment options and the value added they bring to CDPR franchise stores.	This module explains the benefits of offering digital payment options to customers, including contactless payment, increased revenues due to online purchases and more payment alternatives for clients, and an electronic record of all transactions. The module also highlights the potential drawbacks of digital payment, including reductions in the store's physical cash flow.
20	Evaluating client satisfaction to improve service	Explain the value of receiving feedback from clients through a satisfaction survey to improve service quality.	This module describes a standardized digital process for evaluating client satisfaction. Furthermore, it explains the value of receiving and implementing feedback to increase satisfaction and loyalty to the CDPR store.
21	Gender empowerment: Leadership with a focus on gender	Foster the leadership skills of the franchise store owners within their businesses and families.	This module encourages store owners to think about their leadership role within their business and family. It teaches them to identify personal traits that give them the potential to become good leaders.
22	Gender empowerment: Support network and life-work balance	Motivate participants to develop personal and professional networks and achieve life-work balance.	This module describes the importance of having a support network and depending on the people in that network. On a scale from 1 to 10, it asks store owners to evaluate their current level of satisfaction with the following areas of their life: health, finances, business, family, partner, leisure, and personal development. It encourages them to think about in which of these areas they should invest more time and energy.
23	Gender empowerment: How to establish a comprehensive life plan	Help participants establish goals, actions, and timelines to improve every area of life, highlighting the role of saving to achieve financial goals.	In this module, training participants take another look at the evaluation from the previous module. They create a concrete one-sentence goal that could increase their satisfaction rating for each area of their lives. Additionally, they are encouraged to develop a savings plan to support these goals and prepare for emergencies.

Source: Authors' analysis with data from the work plan of the consulting company.

Note: This table provides a list of all the 24 training modules of the digital training program described in Section 3. For each training module, the table describes its main learning objective and a detailed description of its contents.

Table B.3: Training Completion Reminders

Purpose	Channel	Sender	Recipient	Reminder Transcript
Notice of treatment group selection and welcome workshop invitation	Phone call	CMI Inspector	All training group members	Good morning. We are going to initiate an online training program for franchise owners and you were selected to participate. This program will occur 100% virtually starting next Wednesday, when we will run a Welcome Workshop in which we will explain to you your participation in detail. Please confirm your availability with us to attend the workshop from 5 to 6 pm.
Welcome workshop reminder	WhatsApp	WhatsApp group manager	All training group members	Good morning! We'd like to remind you that today at 5 p.m. we will be hosting the Welcome Workshop of our training program. To connect click on the meeting link here: shorturl.at/stCT7. It will last one hour. If you have any problems or concerns with connecting, you can write to us through WhatsApp or get in contact with your CMI inspector. See you soon!
Welcome workshop reminder	Phone call	CMI Inspector	All training group members	Good morning. We hope this finds you well. We are calling to confirm that you received the link to connect to the Workshop today at 5 pm and verify your attendance. We would also like to verify that you have a smartphone or computer from which you can enter the Workshop. I advise you to download the application from Teams and familiarize yourself with your connection. From CMI we will support you to be able to download contents and access the virtual meetings. Remember that with any concern we are here to support you.
Scheduling of one-on-one technical assistance sessions	Phone call	Professional business consultant	All training group members	Good morning. I am calling to coordinate our first Technical Assistance meeting. It will take approximately thirty minutes; what day and time would be best for us to meet virtually? Let's verify that you can connect through the Teams platform. Do you have any questions about the process? Thank you very much, see you soon.
Weekly content release notice	WhatsApp	WhatsApp group manager	All training group members	Good morning, store owners of *Casas de Pollo Rey*. Thank you to all for your active participation in the welcome workshop to our training program. This week we will launch the first 4 training modules associated with the key activities of business operation. Access your smart device app to enjoy these benefits. If you have any problem or concern, you can get in contact with your supervisor. Let's stay in touch.
Weekly personalized completion reminder	WhatsApp	WhatsApp group manager	Training participants who have completed less than half of the released modules	Good morning. We hope you are well. We have noticed that you have not completed modules from our training program. You are missing out on valuable advice and digital money gifts that you can exchange for CDPR chicken and pork inventories! Please let us know if you have any questions. We are at your service!

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Table B.3:Training Completion Reminders (continued from previous page)

Purpose	Channel	Sender	Recipient	Reminder Transcript
Weekly personalized completion reminder	WhatsApp	WhatsApp group manager	Training participants who have completed at least half of the released modules	Good morning! Your progress in completing the modules from our training program is noticeable. Keep going! You are getting closer to the leading group of franchise owners who have completed all the training modules. Please let us know if you have any questions. We are at your service!
Weekly personalized completion reminder	WhatsApp	WhatsApp group manager	Training participants who have completed all the released modules	Good morning, congratulations on completing this week's training modules! Thank you for your commitment and leadership as a CDPR owner. Your hard work and dedication will undoubtedly continue to improve your business profits. Please let us know if you have any questions. We are at your service!

Source: Authors' analysis with data from the work plan of the consulting company.

Note: This table presents the different types of reminders that the intervention's treatment group members receive, as mentioned in Section 3. These reminders include a notice of selection for the training program, an invitation for a welcome workshop, a phone call to schedule one-on-one mentoring sessions with a professional business consultant, weekly content release notices, and weekly personalized completion reminders.

C Summary Statistics

Table C.1: Summary Statistics of the Survey Store Owners, December 2018

	Mean	Std. dev.	Min	Median	Max	N
	(1)	(2)	(3)	(4)	(5)	(6)
Age	36.8	10.6	19	35	67	196
Woman Indicator	.75	.434	0	1	1	196
Number of Children	2.2	1.6	0	2	8	196
Household Income	6,519.1	6,317.6	800	5,000	50,000	136
Secondary Education Completion	.668	.472	0	1	1	196
Higher Education Completion	.214	.411	0	0	1	196
Technical College Indicator	.122	.329	0	0	1	196
College Indicator	.087	.282	0	0	1	196
Smartphone Ownership	.852	.356	0	1	1	196
Telephone Payment	190.5	295.6	20	150	4,000	190
Computer Ownership	.52	.501	0	1	1	196
No. of Paid Employees	.6	.7	0	0	3	195
No. of Unpaid Workers	.2	.5	0	0	3	196
Profits (Self-Reported)	2,432.5	2,560.6	0	2,000	22,500	154
Initial Investment	9,706.9	5,023.6	2,000	9,000	50,000	188
Bank Loan Indicator	.092	.29	0	0	1	196
Received Previous Training	.444	.498	0	0	1	196
Previous Business Experience	.408	.493	0	0	1	196

Source: Data for this table comes from a survey administered to 196 randomly-chosen franchise store owners of *Casas de Pollo Rey* (CDPR) in December 2018.
Note: As described in Section 2, this table presents the most relevant summary statistics of CDPR's franchise store owners in December 2018. Monetary measures are in current Quetzales.

Table C.2: Summary Statistics of the Survey to CDPR Clients, November 2018

	Mean	Std. Dev.	Min	Median	Max	N
	(1)	(2)	(3)	(4)	(5)	(6)
Age	37.1	14.3	17	32	82	108
Completed Secondary Education	.306	.463	0	0	1	108
Number of Children	1.2	1.3	0	1	5	108
Transport Time in Minutes	20.9	32.7	1	10	180	107
Walks to the Store	.565	.498	0	1	1	108
Uses Public Transport	.37	.485	0	0	1	108
Harrased During the Commute	.389	.49	0	0	1	108
Monthly Visits	12.2	9.2	0	10	30	108
Months as a Client	25.1	22.5	0	24	144	107
Pounds of Chicken Purchased per Visit	3.4	2.8	1	2	15	103

Source: Data for this table comes from a survey administered to 108 randomly-chosen *Casas de Pollo Rey* (CDPR) clients in November 2018.
Note: As described in Section 2, this table presents the most relevant summary statistics of CDPR's clients in November 2018.

Table C.3: Summary Statistics of the Short Survey to Stores, November 2020

	Mean	Std. dev.	Min	Median	Max	N
	(1)	(2)	(3)	(4)	(5)	(6)
Woman Owner	.602	.49	0	1	1	752
Age of the Decision-Maker	37.2	9.8	16	37	74	750
Woman Decision-Maker	.713	.453	0	1	1	752
Manager Smartphone Ownership	.924	.265	0	1	1	752
No. of Paid Employees	.8	.7	0	1	4	751
No. of Unpaid Workers	.3	.6	0	0	3	752
No. of Additional Products (Non-CDPR)	3.3	2.7	0	2	8	752
CMI Business Training	.049	.216	0	0	1	752
COVID Improved Sales (Self-Reported)	.434	.496	0	0	1	752

Source: Data for this table comes from a short survey administered by *Corporación Multi Inversiones* (CMI) to the 752 franchise stores of *Casas de Pollo Rey* (CDPR) operating in November 2020.
Note: As described in Section 2, this table details the main summary statistics of CDPR's franchise stores in November 2020. This survey was conducted with the aim of monitoring the sales impacts of the COVID-19 pandemic.

D Experimental Details

Table D.1: Testing Sample Representativity

	Pr(Participant)		Explanatory Variable	
	Coefficient	Std. Error	Mean	Std. Deviation
	(1)	(2)	(3)	(4)
Log(Sales)	-.072	.092	6.891	.984
East	.323	.225	.166	.372
West	.192	.17	.401	.49
χ^2-statistic for joint test	3.567			
p-value	.312			
N	756			

Source: Data for this table comes from the administrative records of *Casas de Pollo Rey* (CDPR) for all the stores operating in September 2021.
Note: This table shows the coefficients from a logit regression of an indicator for participation in the field experiment on store sales and store location. The base zone in the regression is the central region of Guatemala, which includes only the municipality of Guatemala City. As mentioned in Section 4, there is no evidence of any statistically significant relationship between participation in the experiment and store sales or store location.

Table D.2: Stratification Groups

Zone	Class	Sex	Year	Frequency	Percent
(1)	(2)	(3)	(4)	(5)	(6)
Central	A	Female	After 2018	4	0.8
Central	A	Female	Before 2019	12	2.41
Central	A	Male	Before 2019	5	1
Central	B	Female	After 2018	24	4.82
Central	B	Female	Before 2019	63	12.65
Central	B	Male	After 2018	9	1.81
Central	B	Male	Before 2019	16	3.21
Central	C	Female	After 2018	22	4.42
Central	C	Female	Before 2019	30	6.02
Central	C	Male	After 2018	8	1.61
Central	C	Male	Before 2019	5	1
East	A	Female	After 2018	6	1.2
East	A	Female	Before 2019	2	0.4
East	A	Male	After 2018	1	0.2
East	A	Male	Before 2019	4	0.8
East	B	Female	After 2018	22	4.42
East	B	Female	Before 2019	13	2.61
East	B	Male	After 2018	11	2.21
East	B	Male	Before 2019	5	1
East	C	Female	After 2018	13	2.61
East	C	Female	Before 2019	8	1.61
East	C	Male	After 2018	5	1
East	C	Male	Before 2019	2	0.4
West	A	Female	After 2018	6	1.2
West	A	Female	Before 2019	9	1.81
West	A	Male	After 2018	4	0.8
West	A	Male	Before 2019	17	3.41
West	B	Female	After 2018	25	5.02
West	B	Female	Before 2019	31	6.22
West	B	Male	After 2018	16	3.21
West	B	Male	Before 2019	17	3.41
West	C	Female	After 2018	38	7.63
West	C	Female	Before 2019	21	4.22
West	C	Male	After 2018	16	3.21
West	C	Male	Before 2019	8	1.61

Source: Data for this table comes from the baseline survey of the experiment and from the administrative records of *Casas de Pollo Rey* (CDPR).
Note: This table shows the randomization strata described in Section 4. There is one observation per franchise store owner. The zones in Column (1) are three areas comprising all of Guatemala's *departamentos*, which are the highest administrative level in the country. The central zone comprises the entirety of Guatemala City. The east region comprises Alta Verapaz, Baja Verapaz, Chiquimula, El Progreso, Izabal, Jalapa, Jutiapa, Petén, and Zacapa. The west zone includes Chimaltenango, Escuintla, Huehuetenango, Quetzaltenango, Quiche, Retalhuleu, Sacatepequez, San Marcos, Santa Rosa, Sololá, Suchitepéquez, and Totonicapán. Classes in Column (2) correspond to the three tiers that the CMI corporation uses to classify store owners. Franchise owners in class A belong to the owners' group with the highest profitability, owners in class B have intermediate profitability, and owners in class C have the lowest profitability. Column (3) in the table shows the sex of the franchise owner. Column (4) shows the year of opening of their first franchise store.

Table D.3: Training Program Timeline

Week	Implementation Dates	Released Training Materials
1	October 20 - October 26	Modules 0, 1, 2, 3, and 4
2	October 27 - November 2	Modules 5 and 6; consulting session 1
3	November 3 - November 9	Modules 7, 8, and 9
4	November 10 - November 16	Modules 10, 11, and 12
5	November 17 - November 23	Modules 13, 14, and 15; consulting session 2
6	November 24 - November 30	Modules 16, 17, 18, and 19
7	December 1 - December 7	Modules 20, 21, 22, and 23; consulting session 3

Source: Data for this table comes from the training calendar of the consulting company hired by IDB Invest to fulfill its collaboration agreement with *Corporación Multi Inversiones* (CMI).
Note: This table shows the implementation timeline for the training program mentioned in Section 4.

Figure E.1: Baseline & Follow-Up Survey

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Digital Training for Microentrepreneurs: Evidence from an RCT in Guatemala
Baseline Questionnaire
August 31, 2021

NOTICE
This survey must be asked of the business owner, not a business collaborator.

[Fill in automatically.]
Date: _____
Start time: _____

CONSENT
Good morning, I am _____, I am calling on behalf of Casa de Pollo Rey. We are conducting a survey on the characteristics of the owners of Casas de Pollo.
The pollster should read the following information to the owner:
"I would like to ask your permission to participate in a study organized by Casas de Pollo Rey and the Catholic University of Notre Dame. The purpose is to understand how to improve the profitability of Casas de Pollo Rey.

I am going to ask you to answer a few questions about the situation of your business, it should not take us more than half an hour of your time and your answers will be confidential. You can interrupt the survey at any time if you do not want to continue, and if you have any questions, you can contact your manager at the Casas de Pollo Rey by phone.

As a thank you for your time, if you participate in this survey, you will be entered into a La Casa de Pollo Rey promotional raffle. There will be 30 winners and each one will receive 2 aprons from Casa de Pollo Rey, 2 backpacks, 2 water bottles and 5 shopping bags. Thank you very much for your time and collaboration!
Do you agree to participate?
- ☐ Yes
- ☐ No

INTERVIEW BEGINNING
** Throughout the survey any time a respondent answers a multiple choice question with "other," a written answer is requested. **

Do you own the Casa de Pollo Rey?
- ☐ Yes
- ☐ No you are not the owner
- ☐ You were not willing to answer / cut the call.

Are you the person who makes the business management decisions?
- ☐ Yes
- ☐ No If you are not the decision maker, could you pass me the name and number of the decision maker?

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Could you give me your full name?
First name: _____
Paternal last name: _____
Maternal last name: _____

DEMOGRAPHIC INFORMATION
1. What is your age? *[Limit the range from 15 to 100 years old.]*
2. What is your gender?
   - ☐ Male
   - ☐ Female
3. What is the last educational level you completed?
   - ☐ None
   - ☐ Pre-primary
   - ☐ Primary
   - ☐ Basic
   - ☐ Diversified
   - ☐ Technical certification (eg, INTECAP)
   - ☐ University technician
   - ☐ Bachelor's degree
   - ☐ Master's degree
   - ☐ Doctorate degree
4. What is your marital status?
   - ☐ Single
   - ☐ Married
   - ☐ United
   - ☐ Divorced
   - ☐ Separated
   - ☐ Widow
   - ☐ Other:_____
5. How many children under 5 years old and adults over 70 years old live in your household?
6. *[Ask only if the answer to the previous question is greater than zero.]* On average, how many hours a day do you spend caring for them?
7. *[Ask only if the answer to the question before the previous one is greater than zero.]* Does a family member or friend help you with the care of children and the elderly?
   - ☐ Yes
   - ☐ No

PROFESSIONAL EXPERIENCE AND TRAINING

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Continued on next page

Figure E.1: Baseline & Follow-Up Survey – (continued from previous page)

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8. Do you have another paid job apart from Casa de Pollo Rey?
   - ☐ Yes
   - ☐ No
9. Did you own your own business before opening the Casa de Pollo Rey?
   - ☐ Yes Go to the next question.
   - ☐ No Skip the next question.
10. In which sector?
   - ☐ Agriculture
   - ☐ Trade
   - ☐ Construction
   - ☐ Education
   - ☐ Food and grocery
   - ☐ Health
   - ☐ Tourism
   - ☐ Transport
   - ☐ Clothing and footwear
   - ☐ Telecommunications
   - ☐ Other: _____
11. Have you ever received training on business management, in addition to the trainings provided by the Casas de Pollo Rey?
   - ☐ Yes
   - ☐ No

DIGITAL TECHNOLOGY

12. Do you currently have a cell phone?
   - ☐ Yes Go to the next question.
   - ☐ No Skip to the question about Wi-Fi.
   - ☐ Yes, but it was stolen, I lost it or it broke Go to the next question.
13. Is your cell phone a smartphone?
   - ☐ Yes
   - ☐ No
14. Do you have an internet or data plan on your cell phone?
   - ☐ Yes
   - ☐ No
15. Do you have Wi-Fi in your home?
   - ☐ Yes
   - ☐ No
16. Do you have Wi-Fi in your Casa de Pollo Rey?

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   - ☐ Yes
   - ☐ No

BUSINESS PROFILE

17. How many Casas de Pollo Rey do you have? *[Identify them and ask the group of questions corresponding to this section "Business Profile" for each of the owner's Casas de Pollo Rey.]*
18. What is the franchise code? *[If they don't know, you can remind them that they can find it on the invoice, the number they use to order chicken.]*
19. Is the franchise in your name? *[This can be a person's name or the name of a company.]*
   - ☐ Yes Skip the next question.
   - ☐ No
20. What is the name of this franchise?
21. What date did this franchise open?
22. How many salaried employees work in your business not including you?
23. How many unpaid helpers or family members work in your business other than you?
24. How many times have you changed employees since you opened Casa de Pollo Rey?
25. In addition to Pollo Rey and Toledo products, do you sell additional products in your business, such as oil, fruits and vegetables, eggs, dairy products or others?
   - ☐ Yes
   - ☐ No
26. What days of the week does your Casa de Pollo Rey open? [*select hours depending on the days you open in the week*]

Day of the week
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

27. What are the opening hours from Monday to Friday?
   - o Opening time: _____
   - o Closing time: _____

Continued on next page

Figure E.1: Baseline & Follow-Up Survey – (continued from previous page)

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28. What are the opening hours on Saturdays?
    - o Opening time: _____
    - o Closing time: _____
29. What are the opening hours on Sundays?
    - o Opening time: _____
    - o Closing time: _____
30. Do you own, rent, or loan/borrow the place where your Casa de Pollo Rey is located?
    - ☐ Own
    - ☐ Rent
    - ☐ Loan
    - ☐ Other: _____
31. What is the average value of the following amounts in a typical month? For example, don't think about Christmas sales, think about a normal month.
    - ☐ Revenue: _____
    - ☐ Expenses (do not forget to include salaries, taxes, rent of the premises and payment of services): _____
    - ☐ Profits: _____

FINANCIAL RESULTS

32. Do you follow the prices suggested by the Casas de Pollo Rey?
    - ☐ Yes Skip the next question.
    - ☐ Sometimes Go to the next question.
    - ☐ No Go to the next question.
33. On average, what percentage do you charge above the prices suggested by the Señores de las Casas de Pollo Rey?
34. Can you give me an example? [*Only ask for the example if they do not know how to give a percentage, or if their answer does not make much sense*].

SECURITY

35. Have you been a victim of any of the following crimes in your Casa de Pollo Rey? *[Read all the options aloud. Select all that apply.]*
    - ☐ No
    - ☐ Theft of property
    - ☐ Theft of money
    - ☐ Armed assault
    - ☐ Extortion
    - ☐ Other: _____
36. Do you have the following security devices? *[Read aloud all the options. Select all that apply.]*

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- ☐ Mirrors
- ☐ Special badges
- ☐ Alarms Security
- ☐ Cameras
- ☐ Bars
- ☐ Padlocks
- ☐ Other: _____

37. *[If you have checked the box for "security cameras" in the previous question.]* Who bought your security camera?
    - ☐ Casas de Pollo Rey
    - ☐ You
38. Have you limited the hours your franchise is open due to insecurity?
    - ☐ Yes
    - ☐ No

KNOWLEDGE OF BEST BUSINESS PRACTICES

[For each of the following statements, answer whether it is true or false.]

39. The value added of the business is the total value of income minus monthly expenses.
    - ☐ False
    - ☐ True
40. The temporality of promotions must always be well defined by a start date and an end date, while the advertising of the business must be constant.
    - ☐ False
    - ☐ True
41. Product quality complaints associated with taste, color, odor or expiration must be immediately raised to Customer Service through a ticket.
    - ☐ False
    - ☐ True
42. To address an annoyed customer's complaints, we must calm them down and make them see that they might be wrong.
    - ☐ False
    - ☐ True
43. The ideal temperature range for freezers is -8 ° C to -2 ° C.
    - ☐ False
    - ☐ True
44. The recommended frequency for monitoring the temperature of cooling equipment is once a week.
    - ☐ False

Continued on next page

Figure E.1: Baseline & Follow-Up Survey – (continued from previous page)

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☐ True

45. Turning off cooling and freezing equipment every day is desirable as it helps save electricity.
☐ False
☐ True

46. Food cutting boards must be made of metal or wood.
☐ False
☐ True

47. A different knife should be used for each type of meat.
☐ False
☐ True

48. For the financial health of the business it is necessary to record the price and quantity of each product sold.
☐ False
☐ True

49. Business cash flow should be calculated on a weekly basis.
☐ False
☐ True

BUSINESS PRACTICES

[For each of the following questions, choose only one option]

Module 1. Key activities
Module 6. Training

50. When you hire a new employee, do you give them some initial training instead of letting them learn alone?
☐ Yes
☐ No Skip the next question.

51. What subjects do you train them in? *[Let the respondent freely answer and mark all that apply.]*
☐ Business objectives
☐ Hygiene protocols
☐ Store hours
☐ Lists of products
☐ Prices
☐ Customer service
☐ Advantages over the competition
☐ Promotions and discounts
☐ The success photo
☐ Cash register management
☐ Using the daily sales log

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☐ Sales strategies
☐ Communication with clients via WhatsApp
☐ Consequences of poor performance
☐ Growth opportunities
☐ Relationships with the management and colleagues
☐ How to cut the product (chicken / meat)
☐ Other: _____

Module 12. Food handling and preservation

52. What personal hygiene obligations do you maintain yourself and you ask your employees? *[Let the respondent answer freely. Select all that apply.]*
☐ Daily bath
☐ Brushing teeth
☐ Cleaning clothes and shoes
☐ Short and clean nails without nail polish
☐ Hair up
☐ Hair net
☐ Apron cleaned every day
☐ Facemasks
☐ Wash hands frequently
☐ Do not wear jewelry
☐ None

53. How often do you wash your hands at your Casa de Pollo Rey? *[Let the respondent answer freely. Select all that apply.]*
☐ Once every 30 minutes
☐ Before handling food
☐ Before putting on gloves
☐ Before delivering food to the customer
☐ After touching the ground
☐ After touching surfaces that have direct contact with the chicken
☐ After going to the bathroom
☐ Other: _____

Module 10. Maintenance of freezing and cooling equipment

54. How often do you unplug and clean the freezing and cooling equipment with warm water and mild soap?
☐ Never
☐ Annually
☐ Monthly
☐ Weekly

Continued on next page

Figure E.1: Baseline & Follow-Up Survey – (continued from previous page)

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- ☐ Daily
- ☐ Other: _____

55. Do you wash boards and knives with water and detergent after each use?
    - ☐ Yes
    - ☐ No
56. Have you identified the priorities within all the activities of your Casa de Pollo Rey?
    - ☐ Yes
    - ☐ No

Module 3. Asset security

57. Do you have a fire extinguisher and emergency protocol?
    - ☐ Yes
    - ☐ No

Modules 4, 9 and 11. Added value: WhatsApp, home orders and deliveries, digital payment, other products.

58. Do you receive digital payments at your Casa de Pollo Rey?
    - ☐ Yes
    - ☐ No
59. Do you use WhatsApp to communicate with your customers and promote your products?
    - ☐ Yes
    - ☐ No
60. Can your customers order by WhatsApp?
    - ☐ Yes
    - ☐ No
61. Can your customers receive home deliveries?
    - ☐ Yes
    - ☐ No
62. Do you offer your customers recipe options using Casa de Pollo Rey products?
    - ☐ Yes
    - ☐ No

Module 5. Customer service

63. Do you have a suggestion and complaint box inside your Casa de Pollo Rey?
    - ☐ Yes
    - ☐ No

Modules 7 and 8. Marketing

64. Do you apply sales to promote the consumption of your products with low turnover and those close to expiration?
    - ☐ Yes
    - ☐ No
65. Do you remember the name of your clients to generate a friendly and cordial environment?
    - ☐ Yes

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- ☐ No

66. Do you have a contact list of your clients?
    - ☐ Yes
    - ☐ No
67. Is a speech or script implemented that guides the conversation with the customer to make them buy more often or in greater quantity?
    - ☐ Yes
    - ☐ No
68. Do you advertise for your business using your own flyers and advertisements?
    - ☐ Yes
    - ☐ No
69. Do you check the quantity and quality of the product before delivering the package to the customer, and whether the cash is received and delivered?
    - ☐ Yes
    - ☐ No

Module 14. Financial administration

70. Do you have a daily record of each of your sales, including the name of the item, the price, the quantity, and the form of payment?
    - ☐ Yes
    - ☐ No
71. Do you prepare a monthly cash flow calculation, where you record the total value of your income, costs, expenses, and profits?
    - ☐ Yes
    - ☐ No
72. At the beginning of the month, do you create a budget of income, costs, and expenses that allows you to make projections and make spending decisions?
    - ☐ Yes
    - ☐ No
73. Have you calculated which products are the most profitable for your business?
    - ☐ Yes
    - ☐ No
74. In previous months, have you ever mixed household expenses with business expenses?
    - ☐ Yes
    - ☐ No

No module. Inventory management

75. Do you carry out inventory control and know your minimum and maximum stocks?
    - ☐ Yes
    - ☐ No

Continued on next page

Figure E.1: Baseline & Follow-Up Survey – (continued from previous page)

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8. Do you have another paid job apart from Casa de Pollo Rey?
   - ☐ Yes
   - ☐ No
9. Did you own your own business before opening the Casa de Pollo Rey?
   - ☐ Yes Go to the next question.
   - ☐ No Skip the next question.
10. In which sector?
    - ☐ Agriculture
    - ☐ Trade
    - ☐ Construction
    - ☐ Education
    - ☐ Food and grocery
    - ☐ Health
    - ☐ Tourism
    - ☐ Transport
    - ☐ Clothing and footwear
    - ☐ Telecommunications
    - ☐ Other: _____
11. Have you ever received training on business management, in addition to the trainings provided by the Casas de Pollo Rey?
    - ☐ Yes
    - ☐ No

DIGITAL TECHNOLOGY

12. Do you currently have a cell phone?
    - ☐ Yes Go to the next question.
    - ☐ No Skip to the question about Wi-Fi.
    - ☐ Yes, but it was stolen, I lost it or it broke Go to the next question.
13. Is your cell phone a smartphone?
    - ☐ Yes
    - ☐ No
14. Do you have an internet or data plan on your cell phone?
    - ☐ Yes
    - ☐ No
15. Do you have Wi-Fi in your home?
    - ☐ Yes
    - ☐ No
16. Do you have Wi-Fi in your Casa de Pollo Rey?

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- ☐ Yes
- ☐ No

BUSINESS PROFILE

17. How many Casas de Pollo Rey do you have? *[Identify them and ask the group of questions corresponding to this section "Business Profile" for each of the owner's Casas de Pollo Rey.]*
18. What is the franchise code? *[If they don't know, you can remind them that they can find it on the invoice, the number they use to order chicken.]*
19. Is the franchise in your name? *[This can be a person's name or the name of a company.]*
    - ☐ Yes Skip the next question.
    - ☐ No
20. What is the name of this franchise?
21. What date did this franchise open?
22. How many salaried employees work in your business not including you?
23. How many unpaid helpers or family members work in your business other than you?
24. How many times have you changed employees since you opened Casa de Pollo Rey?
25. In addition to Pollo Rey and Toledo products, do you sell additional products in your business, such as oil, fruits and vegetables, eggs, dairy products or others?
    - ☐ Yes
    - ☐ No
26. What days of the week does your Casa de Pollo Rey open? [*select hours depending on the days you open in the week*]

Day of the week
Monday
Tuesday
Wednesday
Thursday
Friday
Saturday
Sunday

27. What are the opening hours from Monday to Friday?
    - o Opening time: _____
    - o Closing time: _____

4

Source: Baseline and follow-up survey of the experiment.
Note: The original baseline and follow-up survey was administered in Spanish. This figure presents the English transcript of the survey.

F Business Practices Indexes

Table F.1: List of Questions Indexed by Business Practice Category

Category	Question
Marketing	• Do you apply sales to promote the consumption of your products with low turnover and those close to expiration? • Do you remember the name of your clients to generate a friendly and cordial environment? • Do you have a contact list of your clients? • Do you advertise for your business using your own flyers and advertisements?
Digital Marketing	• Do you receive digital payments at your Casa de Pollo Rey? • Do you use WhatsApp to communicate with your customers and promote your products? • Can your customers order by WhatsApp?
Finance	• Do you keep a daily record of each of your sales, including the name of the item, its price, quantity, and the form of payment? • Do you prepare a monthly cash flow calculation, where you record the total value of your income, costs, expenses, and profits? • At the beginning of the month, do you create a budget of income, costs, and expenses that allows you to make projections and make spending decisions? • Have you calculated which products are the most profitable for your business? • In previous months, have you ever mixed household expenses with business expenses?
Inventory Management	• Do you carry out inventory control and know your minimum and maximum stocks? • Do you calculate the reorder point based on your inventory to determine when to order from the Casas de Pollo Rey?
Time Management	• Do you have enough time to do the things you like, family activities, and run your business? • Do you have a plan for your personal development that includes specific personal and financial goals?
Operations & Training	• Do you wash your hands before having contact with food? • Do you clean the cooling and freezing equipment with warm water and mild soap on a weekly basis? • Do you wash boards and knives with water and detergent after each use? • Have you identified the priorities within all the activities of your Casa de Pollo Rey? • Do you have a fire extinguisher and emergency protocol? • Do you have a suggestion and complaint box inside your Casa de Pollo Rey? • Can your customers receive home deliveries? • Do you offer your customers recipe options using Casa de Pollo Rey products?

Continued on next page

Table F.1: List of Questions Indexed by Business Practice Category (continued from previous page)

Index	Business Practices Items
	• When you hire a new employee, do you give them initial training on key business areas instead of letting them learn alone?

Source: Authors' analysis.
Note: This table provides a detailed list of the practices included in each category analyzed in Section 5.

G Text Reminders and Video Capsule Completion

To quantify the correlation between receiving a text reminder and the decision to complete a video capsule, this section uses a very similar regression model to the one described in Section 8 to study the effect of consulting meetings on engagement. Specifically, the coefficient β in the following regression model is estimated via OLS:

$$W_{ict} = \alpha + X_{it}\beta + \gamma_{i,dow(t)} + \delta_{i,woy(t)} + \lambda_{ct} + \varepsilon_{ict}, \tag{G.1}$$

where W_{ict} is an indicator for the event that trainee i completes capsule c at date t, X_{it} is an indicator for the event that the consulting company sends trainee i a text reminder to encourage completion at t; $\delta_{i,dow(t)}$ are individual-specific weekday fixed effects, $\lambda_{i,woy(t)}$ are week fixed effects, and θ_{ct} are capsule×date dummies. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level.

This analysis does not rely on a clear identification strategy to recover the causal impact of the reminders on capsule completion. The identification assumption that is necessary to interpret the OLS estimate of β as the effect of reminders on video capsule completion is that the text message dummy is as good as random. This assumption is not a reasonable one. While the delivery dates and text message content were programmed prior to the beginning of the training program by the consulting company, as reported in Table B.3 of Appendix B, the recipient list of each text message is a function of prior completion rates, complicating the interpretation of the estimates below as reflecting a causal relationship. Regardless, Table G.1 reports the OLS estimates of β across several specifications with a varying set of controls. There is a strongly significant correlation between the timing of the text reminders and the completion of training video capsules. Receiving a text reminder is associated with an increase of 0.8 percentage points in the probability of watching a video capsule on the same date (t-statistic=4).

These results align with previous literature demonstrating the behavioral relevance of nudges (Thaler and Sunstein, 2008) and with the findings of previous experimental studies of the impact of reminders on saving decisions (Karlan et al., 2016), gym attendance (Calzolari and Nardotto, 2017), and other healthy behaviors for weight loss (Patrick et al., 2009). A theoretical foundation suggested before to explain the effects of reminders is the theory of salience, reviewed extensively in Bordalo et al. (2022).

Table G.1: The Time Correlation Between Reminders and App Engagement

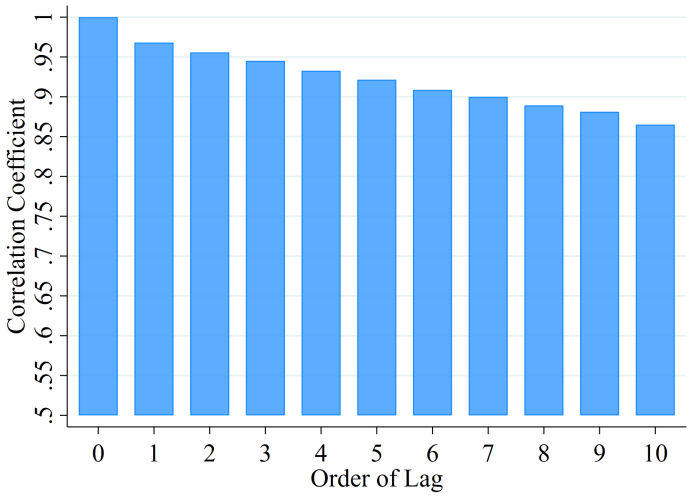
	(1)	(2)	(3)	(4)
Text Reminder	0.008***	0.013***	0.010***	0.009***
	(0.002)	(0.002)	(0.003)	(0.003)
R-Squared	0.0006	0.0289	0.0474	0.0828
Date × Capsule Dummies	N	Y	Y	Y
Individual × Weekday FEs	N	N	Y	Y
Individual × Week FEs	N	N	N	Y
Number of Weeks	14	14	14	14
Week Days	7	7	7	7
Number of Capsules	28	28	28	28
Number of Subjects	166	166	166	166
Observations	455,504	455,504	455,504	455,504

Source: Data on video capsule completion comes from the log file of the mobile app. The reminder submission dates come from the consulting company's telephonic records.
Note: As mentioned in Appendix G, this table presents the Ordinary Least Squares (OLS) estimates of the correlation between receiving a text reminder and the probability of watching a video capsule on the same date for the training subjects in the treatment group. Each observation is a trainee×capsule×date triplet. The dependent variable is an indicator of trainee i's viewership of the video capsule c at date t. The "Text Reminder" variable is an indicator for the event that the consulting company sent a text reminder to encourage video capsule completion to i at t. Standard errors within parentheses are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

H Sales and Profit Impact Estimation

H.1 Store Sales Auto-Correlogram

Figure H.1: Auto-Correlogram for Store Sales



Source: Authors' analysis based on the monthly sales records in USD of *Casas de Pollo Rey* (CDPR) for the 539 stores in the experimental sample from December 2020 to December 2022.
Note: As mentioned in Section 6.2, this figure presents the auto-correlogram for monthly store sales in USD for a 10-month horizon.

H.2 Profit Impact Estimates for Alternative Estimating Samples

Table H.1: The Effects of Digital Training on Self-Reported Profits
Outcome Variable: Self-Reported Mean Monthly Profits

	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	102.0**	110.7***	81.4*	78.5*	90.4**	71.9*
	(40.8)	(41.9)	(42.7)	(43.0)	(44.8)	(43.5)
R-squared	0.159	0.188	0.222	0.208	0.242	0.299
Control Mean at Baseline	437.1	437.1	437.1	437.1	437.1	437.1
Controls	N	Y	Y	N	Y	Y
Profits at Baseline	N	N	Y	N	N	Y
Includes Stores that Exited (Zero Profits)	Y	Y	Y	N	N	N
Total Stores	539	539	539	539	539	539
Unreported Outcome	68	68	170	143	143	224
Observations	471	471	369	396	396	315

Source: Data for this table comes from the follow-up survey of the experiment.
Note: This table tests the robustness of the Intention-to-Treat (ITT) impact estimates in Table 5 of Section 7.5 for different estimating samples. The list of controls at the store owner level includes dummies for smartphone ownership, previous business experience, high school education, age greater than 50, and marital status. All regressions control for strata dummies. Standard errors within parentheses are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

H.3 Correcting for Pre-Trends in Store Sales Across Experimental Groups

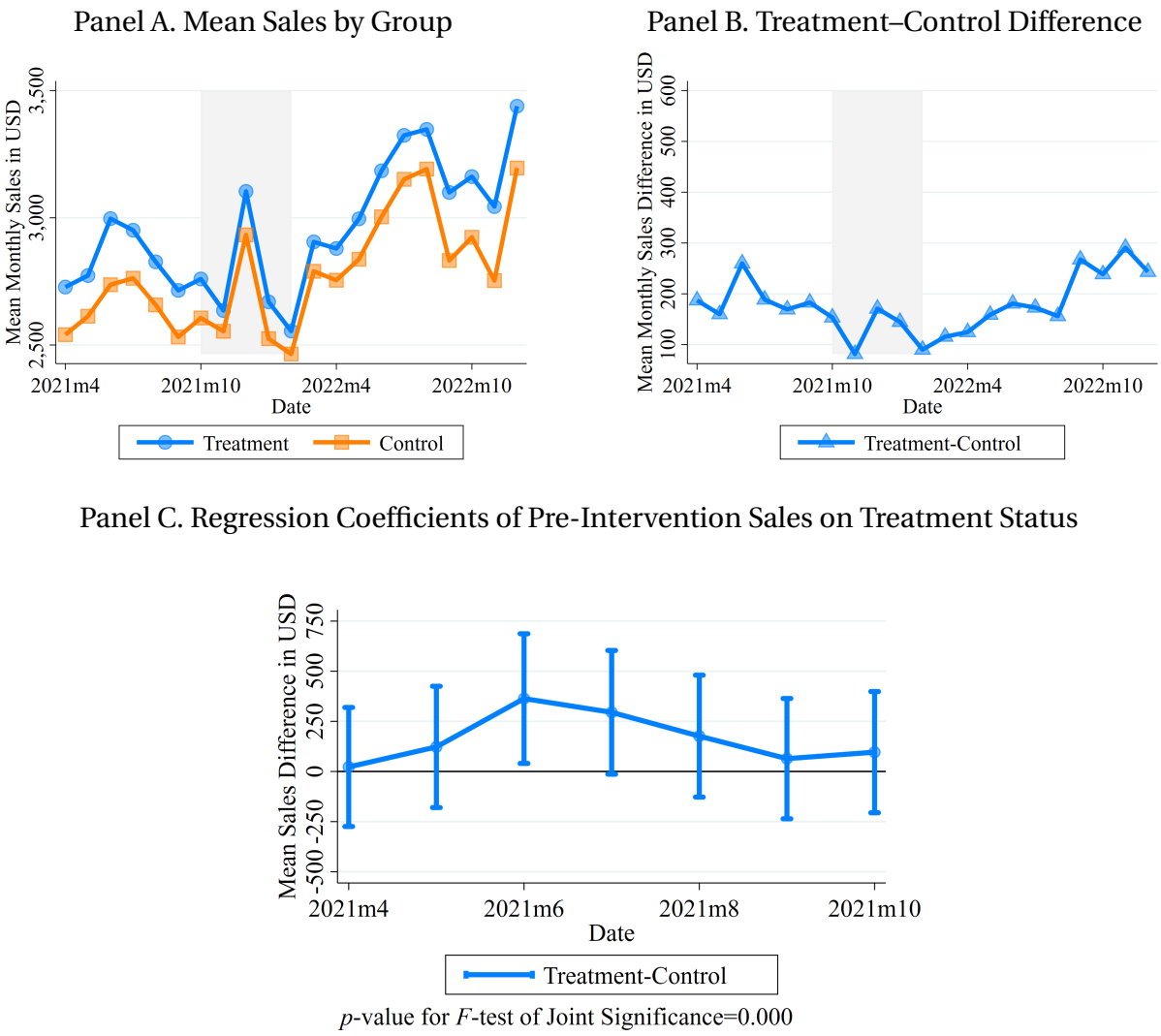
This section shows evidence of significant differential trends in sales arising by chance between the treatment and the control group before treatment assignment. Neglecting these trends would violate the parallel trends assumption underlying the differences-in-differences design, which is why all the sales regressions in the main body of the paper control for municipality-specific trends and time trends that depend on initial store sales. For transparency, this section demonstrates how the impact estimates from the differences-in-differences specification change when these trends are added as controls.

First, Figure H.2 presents summary sales trends for the stores in the experimental sample from April 2021 (i.e., six months before treatment) to December 2022. Panel A presents the mean monthly sales by treatment group, revealing a sales gap between the treatment and the control group, which narrows down before treatment but expands afterward. Panel B plots the difference in the mean sales between the treatment and control groups and confirms this pattern. Panel C formally tests whether the narrowing difference in sales between groups before treatment is statistically significant by running a regression of store-level sales six months prior to treatment on month dummies interacted with the treatment indicator, controlling for strata dummies. There are significant differential pre-treatment trends in sales across groups.

Second, to correct these trends, the sales regression specifications are modified by adding trends that depend on initial store sales and municipality-specific trends as controls. The former trends capture changes in the size of operations over time, while the latter trends control for regional determinants of sales, such as local demand. Figure H.3 plots the coefficient estimates and confidence intervals of an event-study specification and shows that adding these trends to the regression specifications tilts coefficient estimates counterclockwise, effectively correcting the pre-trend in sales described observed in Panel C of Figure H.2.

Finally, Table H.2 shows that adding these trends increases the magnitude and significance of the sales impact estimates. As shown in Panel A of this table, controlling for these trends increases the magnitude and significance of the treatment effect estimate from 35.6 USD (t-statistic=0.4) to 158.7 USD (t-statistic=1.68). The latter number is close to the observed increase of 209.2 USD in Panel B of Figure H.2 between November 2021 and November 2022. It is also close to 260.7 USD, the change from baseline to endline in the difference between the sales CDF for the treatment stores and the sales CDF for the control stores, as depicted in Figure H.4. In sum, once the empirical analysis takes into account that treatment breaks and reverts a declining trend in sales for the treatment stores relative to the control stores, a significant effect on sales emerges, compatible with the magnitudes eyeballed from the administrative records.

Figure H.2: Sales Trends by Experimental Group



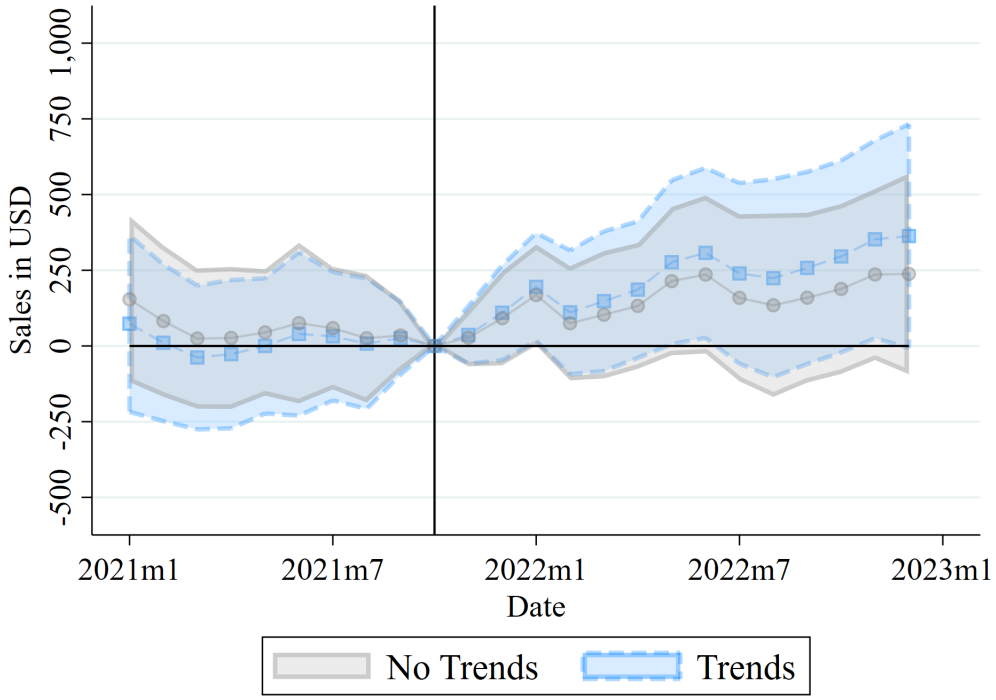
Source: Authors' analysis based on monthly sales records of *Casas de Pollo Rey* (CDPR) for the 539 stores in the experimental sample.
Note: As mentioned in Appendix H.3, this figure presents sales trends for the stores in the experimental sample. Panel A presents their mean monthly sales in USD by experimental group from April 2021 (i.e., six months before treatment) to December 2022. The connected circles represent the treatment group, while the connected squares represent the control group. Panel B presents the mean monthly difference in sales between the treatment and the control group in USD. Panel C tests whether the difference in sales between groups before treatment is statistically significant by running a regression of store-level sales on month dummies interacted with the treatment indicator, controlling for strata dummies. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level. Each point represents a coefficient estimate for a different interaction, while the vertical bars represent 95 percent confidence intervals. The p-value in the footnote corresponds to the F-test of joint significance for all the interactions.

Table H.2: The Effects of Digital Training on Store Sales: Differences-in-Differences Specifications Without Trends that Depend on Initial Sales and Municipality-Specific Trends

	No Trends	Trends That Depend on Initial Sales	Initial-Sales & Municipality-Specific Trends
	(1)	(2)	(3)
		Panel A. All Stores	
Treatment × Post	35.6	86.3	158.7∗
	(98.0)	(91.6)	(94.2)
R-squared	0.038	0.079	0.211
Control Mean at Baseline	2,606.2	2,606.2	2,606.2
Number of Stores	539	539	539
Number of Months	25	25	25
Missing observations because:			
Store Had Not Entered	342	342	342
Store Had Exited	1,132	1,132	1,132
Observations	12,001	12,001	12,001
		Panel B. Balanced Panel	
Treatment × Post	64.1	125.4	220.7∗
	(118.6)	(108.6)	(117.1)
R-squared	0.055	0.106	0.241
Control Mean at Baseline	3,045.1	3,045.1	3,045.1
Number of Stores	335	335	335
Number of Months	25	25	25
Missing observations because:			
Store Had Not Entered	0	0	0
Store Had Exited	0	0	0
Observations	8,375	8,375	8,375
		Panel C. Excluding Multi-Store Owners	
Treatment × Post	43.8	120.6	231.0∗∗
	(108.6)	(96.7)	(106.9)
R-squared	0.034	0.097	0.231
Control Mean at Baseline	2,407.1	2,407.1	2,407.1
Number of Stores	463	463	463
Number of Months	25	25	25
Missing observations because:			
Store Had Not Entered	309	309	309
Store Had Exited	970	970	970
Observations	10,296	10,296	10,296

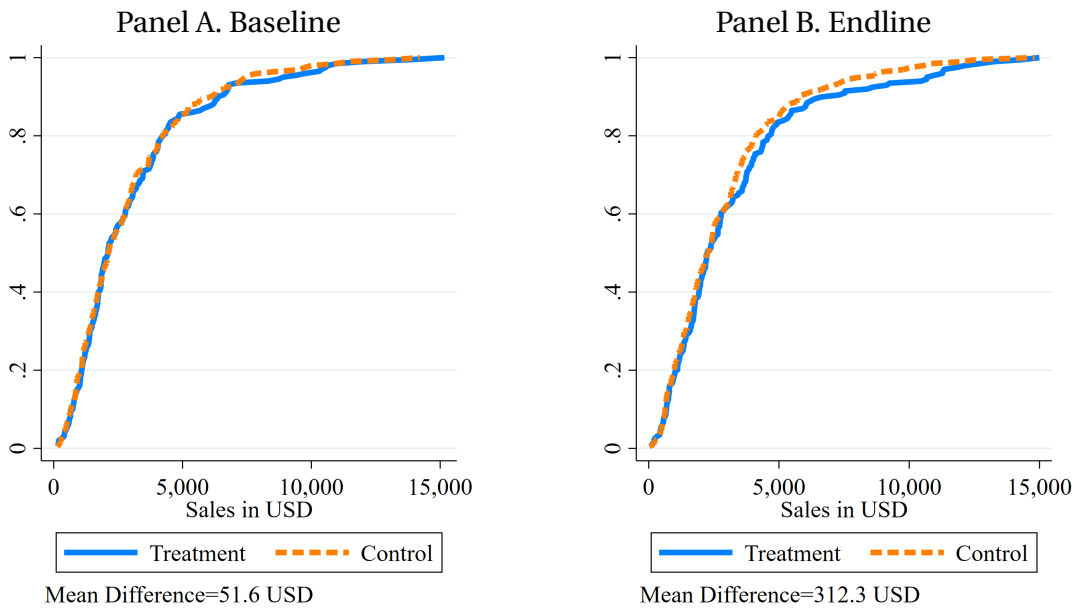
Source: Data for this table comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample from December 2020 to December 2022.
Note: This table compares the impacts of digital training on store sales in the experimental sample with and without time trends that depend on initial store sales and municipality-specific trends. The balanced sample includes stores that operated without interruption from December 2020 to December 2022. All regressions control for store fixed effects and time dummies. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level. As discussed in Appendix H.3, both types of trends have a sizable influence on the estimates of impact on store sales.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Figure H.3: Differences-in-Differences Estimates of the Impact on Sales: Comparing Estimates With and Without Trends



Source: Authors' analysis based on the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample from January 2021 to December 2022.
Note: This figure shows the event-study results described in Appendix H.3. The areas represent 95 percent confidence intervals, and the markers represent point estimates. The vertical line represents the moment of treatment. The circles depict point estimates that result from excluding the time trends that depend on initial store sales and the municipality-specific trends from the regression, while the squares depict the point estimates that result from including both of these trends in the regression. Standard errors are robust to heteroskedasticity and are clustered at the store owner level. The estimating sample includes the stores that operated without interruption from January 2021 to December 2022.

Figure H.4: The Cumulative Distribution Function of Store Sales by Treatment Group



Source: Authors' analysis based on the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample that had not exited the market by endline.
Note: As mentioned in Appendix H.3, this figure compares the cumulative distribution (CDF) of monthly store sales between the treatment and the control group. Panel A depicts CDFs at baseline (October 2021), whereas Panel B depicts CDFs at the endline (June 2022). The mean difference in the footnote of each panel is the mean sales difference, taken over deciles, between the treatment and the control group.

H.4 Digital Training Impacts on Store Sales Including Store Exits

This section investigates the impacts of digital training on store sales unconditional on remaining in operation. It begins by presenting in Table H.3 the training impact estimates resulting from coding the sales of stores that exit the market as zero after their exit rather than excluding post-exit months from estimation. There are no significant impacts of digital training for this broader sample, implying that the positive impacts reported in the main body of the paper are only conditional on not exiting the market.

Then, the stores that exit the market during the study period are characterized. For this purpose, Table H.4 regresses a dummy for store exit by December 2022 on initial store sales, store owner demographic characteristics, municipality dummies, and nearby store counts. Column (1) shows that initial sales have a strong predictive power over the decision to exit the market: a 1,000 USD increase in initial sales lowers the probability of store exit by 2.8 percentage points (t-statistic=4.7). This impact estimate remains roughly unchanged after including other variables in estimation in Columns (2) through (4). Column (2) shows that receiving a "low performing" grade in the three-tier classification system designed by the franchisor to capture store profitability increases the store exit probability by 10.2 percentage points (t-statistic=2.3). The statistical significance of this impact estimate remains unchanged after including other variables in estimation in Columns (3) and (4). Column (3) shows that municipality dummies have a sizable predictive power over the decision to exit the market, increasing the R^2 coefficient of determination from 0.063 in Column (2) to 0.371 in Column (3). Finally, Columns (4) and (5) examine whether business stealing leads to store exit in the experimental sample. To capture business stealing, two spatial proximity measures are constructed for each store: the count of stores within 5 km and the distance to the nearest neighbor in kilometers for each store. Table H.5 summarizes the distribution of these variables in the experimental sample.

There are no significant impacts of nearby competition on the likelihood of store exit.

Thus, low-performing stores with low initial sales are more likely to exit the market, and the training program fails to impact their sales and decision to exit the market. This finding is consistent with what is found when examining the main reported reasons for exit documented in the paperwork completed by the franchisees each time they permanently close a store. These reports identify persistent low sales resulting from a poor store location as the main reason for exit in 31.8 percent of the store closures from August 2021 to June 2022.

Table H.3: The Effects of Digital Training on Store Sales: Differences-in-Differences Specification Including Zero Sales After Market Exit

	All Stores	Balanced Panel	Excluding Multi-Store Owners
	(1)	(2)	(3)
Treatment × Post	97.2	161.9	124.4
	(103.8)	(110.0)	(116.4)
R-squared	0.235	0.253	0.256
Control Mean at Baseline	2,547.4	2,627.4	2,344.0
Number of Stores	539	470	463
Number of Months	25	25	25
Missing observations because:			
Store Had Not Entered	315	0	284
Store Had Exited	0	0	0
Observations	13,160	11,750	11,291

Source: Data for this table comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample from December 2020 to December 2022.
Note: This table presents the impacts of digital training on store sales in the experimental sample. As discussed in Appendix H.4, the sales of stores that exit the market are coded as zero in the months subsequent to their exit. The balanced sample includes stores that opened on or earlier than December 2020. All regressions control for store fixed effects, time dummies, municipality-specific time trends, and time trends that depend on initial store sales. Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.4: The Determinants of Store Exit in the Experimental Sample
Outcome Variable: Dummy for Store Exit from the Market by December 2022

	(1)	(2)	(3)	(4)	(5)
Initial Sales (USD Thousands)	-0.028***	-0.022***	-0.024***	-0.024***	-0.024***
	(0.006)	(0.006)	(0.007)	(0.007)	(0.007)
Female Owner		-0.033	0.016	0.018	0.016
		(0.046)	(0.059)	(0.060)	(0.060)
Older than 50		0.017	-0.032	-0.025	-0.033
		(0.060)	(0.082)	(0.083)	(0.082)
No Highschool		-0.028	-0.039	-0.043	-0.039
		(0.044)	(0.058)	(0.059)	(0.059)
No Internet Access		-0.041	0.053	0.065	0.052
		(0.123)	(0.171)	(0.175)	(0.172)
Low Performing		0.108**	0.141**	0.139**	0.142**
		(0.048)	(0.062)	(0.063)	(0.062)
Count of Stores Within 5k				0.013	
				(0.014)	
Count of Treated Stores Within 5k				-0.026	
				(0.026)	
Distance to the Nearest Store in km					-0.001
					(0.010)
R-squared	0.030	0.043	0.361	0.363	0.361
Outcome Mean	0.291	0.291	0.291	0.291	0.291
Municipality Fixed Effects	N	N	Y	Y	Y
Observations	539	539	539	539	539

Source: Data for this table comes from the administrative records of *Casas de Pollo Rey* (CDPR) and from the baseline survey of the experiment.
Note: This table presents the coefficient estimates from Ordinary Least Squares (OLS) regressions of a dummy for store exit by December 2022, the administrative records' last month of data. Controls include store-level sales in USD thousands in the first month of operations in Column (1), demographic characteristics at the store owner level in the baseline survey in Column (2), municipality fixed effects in Column (3), nearby store counts in Column (4), and distance to the nearest neighbor in Column (5). Standard errors are robust to heteroskedasticity of unknown form and are clustered at the store owner level. As discussed in Appendix H.4, initial sales and the indicator for low performance assigned by the franchisor at opening are the strongest predictors of store exit in the sample.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.5: Summary Statistics – Store Proximity

	Stores Within 5 km	Treated Stores Within 5 km	Control Stores Within 5 km	Distance to Nearest Neighbor in km
	(1)	(2)	(3)	(4)
All Stores	14.8	7.5	7.3	3.6
	(16)	(8.2)	(8)	(6)

Source: Data for this table comes from the administrative records of *Casas de Pollo Rey* (CDPR) on store location for the 539 stores in the experimental sample.
Note: As discussed in Appendix H.4, this table presents the means and standard deviations of four variables that measure each store's proximity in kilometers to the other stores of the experimental sample. Numbers enclosed in parentheses are standard deviations.

H.5 Comparing Reported Profits and Reported Revenue Minus Expenses

Table H.6: Reported Profits Versus Reported Revenue–Expenses

	Mean	S.D.	Median	% Negative	Correlation w/ Reported Profits		
					Pearson	Spearman	p-value
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Panel A. Baseline							
Reported Profits	467	537.1	389.6	0			
Reported [Revenues-Expenses]	1,803.8	4,753.2	909.1	7.8	.476	.379	.000
Panel B. Endline							
Reported Profits	388.5	440.3	259.7	0			
Reported [Revenues-Expenses]	1,576.8	2,356.7	779.2	7.1	.521	.62	.000

Source: Data for this table comes from the baseline and follow-up surveys of the experiment.
Note: As mentioned in Section 7.5, this table reports summary statistics of the distribution of monthly reported profits in USD and the distribution of reported revenue minus expenses at the store level in the baseline and follow-up surveys, as well as the correlation between both variables.

H.6 Comparing Actual and Reported Revenue

This section compares the distribution of actual and reported store-level revenues in the baseline and follow-up surveys. To estimate actual revenues, the sales value from the administrative records is multiplied by one plus the markup implicit in the franchisor's final consumer pricing guidelines (see Figure H.5). While these are only pricing recommendations, 94 percent of the store owners in the experimental sample declared following these guidelines in the baseline survey. According to the executive officers of the multinational company, pricing guidelines involve a 20 percent markup over the price charged to franchisees for raw chicken and pork and a 30 percent markup for cooked products. This information is used to construct an average markup measure across all food products using disaggregate sales by product type, which are available up to July 2020. As shown in Figure H.6, the mean share of store sales remains relatively constant at around 60 percent for raw chicken, 30 percent for cooked food, and 10 percent for raw pork between January 2017 and July 2020. Based on this information, the markup over total sales is estimated to be 23 percent. This figure is equal to the weighted average of the product-specific markups that uses the product shares of store sales in July 2020 as weights.

Table H.7 and Figure H.7 present the results from the comparison of actual and reported store-level revenues. This comparison yields two vital findings. First, actual revenues have a strong predictive power over reported revenues in the baseline survey (t-statistic=14.8) and the follow-up (t-statistic=13.1) in an OLS regression, as shown in Figure H.7. Second, stores underreport sales by 19.2 and 35.8 percent on average in the baseline and follow-up survey, respectively, as shown in Table H.7.

Figure H.5: CDPR Final Consumer Price Menu

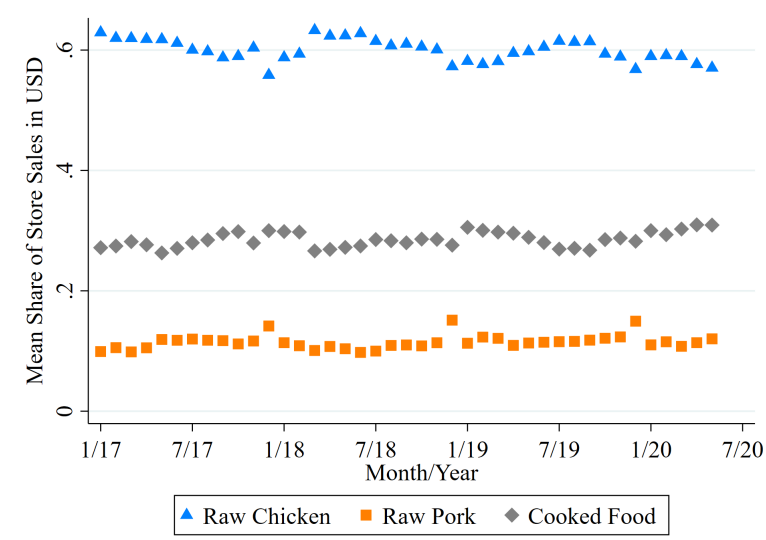
Panel A. Raw Chicken

Panel B. Raw Pork

Panel C. Prepared Foods

Source: Suggested pricing menu for final consumers of *Casas de Pollo Rey* (CDPR) in September 2021.
Note: This figure shows the menu of prices by food item for final consumers of CDPR, as described in Appendix H.6. These pricing guidelines are adopted by 94 percent of the store owners in the experimental sample, according to the baseline survey. All franchise owners receive a picture of this menu from the franchisor whenever prices change. Consumer prices involve a 20 percent markup for raw chicken and pork products and a 30 percent markup for prepared products.

Figure H.6: Franchise Store Sales by Product, 2017-2020



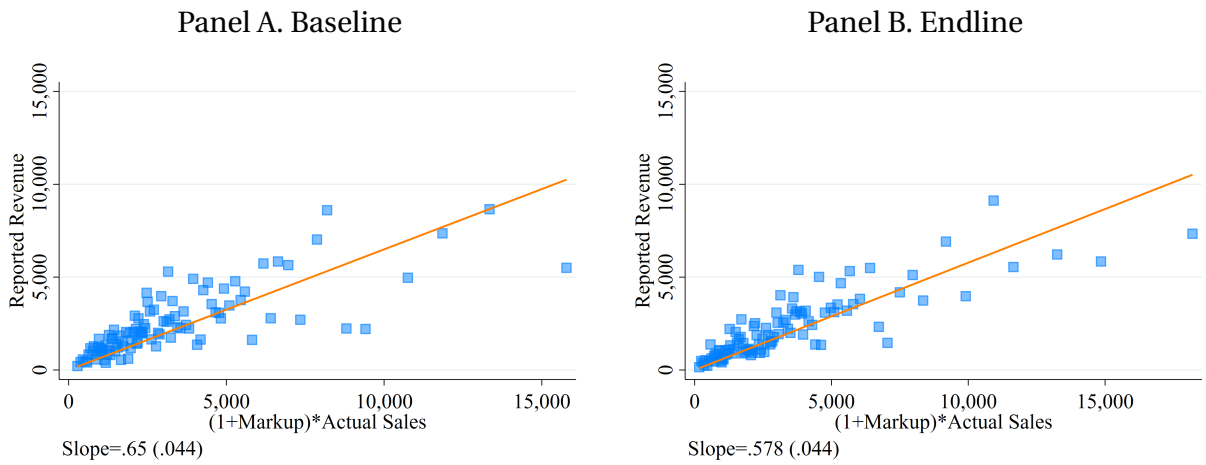
Source: Data for this table comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for all franchise stores that operated from January 2017 to May 2020.
Note: This figure shows the distribution of sales value in USD by product category across stores, as mentioned in Appendix H.6.

Table H.7: Estimated Revenue Versus Reported Revenue

	Mean	Median	25th	75th	Correlation w/ Estimated Revenues	
					Pearson	Spearman
	(1)	(2)	(3)	(4)	(5)	(6)
			Panel A. Baseline			
(1+Markup)*Actual Sales	3,281.8	2,404.8	1,371.9	4,240.3		
Reported Revenues	2,652	1,948.1	649.4	3,506.5	.311	.544
% Difference	-19.2	-19	-52.7	-17.3		
			Panel B. Endline			
(1+Markup)*Actual Sales	3,440.6	2,577.6	1,282.4	4,324.1		
Reported Revenues	2,208.9	1,298.7	389.6	3,246.8	.572	.519
% Difference	-35.8	-49.6	-69.6	-24.9		

Source: Self-reported revenue data comes from the baseline and follow-up surveys of the experiment. Data used to estimate actual revenues comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample.
Note: As mentioned in Section 7.5, this table compares the distribution of the estimate for actual revenues with the distribution of reported revenues at the store level, and presents the correlation between both variables. Actual revenues are estimated by inflating the monthly sales average at the store level by 23 percent. This percentage is an estimated overall markup for food inputs, calculated as a weighted average of product-specific markups, where the revenue shares of each product in July 2020 are the weights. Average monthly sales at baseline are defined as the monthly average sales in 2021, while average monthly sales at endline are the monthly average sales in 2022.

Figure H.7: Estimated Revenue Versus Reported Revenue



Source: Self-reported revenue data comes from the baseline and follow-up surveys of the experimental intervention. Data used to estimate actual revenues comes from the monthly sales records of *Casas de Pollo Rey* (CDPR) for the stores in the experimental sample.
Note: As described in Section 7.5, this figure plots the proxy for actual revenues against reported revenues. Each bin represents the mean values of reported and proxy revenues for a different percentile of the distribution of the proxy at the store level. Actual revenues by are approximated by inflating the monthly sales average at the store level by 23 percent. This percentage is an estimated overall markup for food inputs, calculated as a weighted average of product-specific markups, where the revenue shares of each product in July 2020 are the weights. Average monthly sales at baseline in Panel A are defined as the monthly average sales in 2021, while average monthly sales at endline in Panel B are the monthly average sales in 2022. The slope in each panel is the regression coefficient of the proxy for actual revenue in a store-level regression where the outcome variable is reported revenue in the baseline and the follow-up survey, in Panels A and B, respectively. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.

H.7 The Impacts of Digital Training on Individual Business Practices

Table H.8: The Effect of Treatment Assignment on Take-Up Under Alternative Definitions

	3 Meetings + 0% Videos	3 Meetings + 25% Videos	3 Meetings + 50% Videos	Graduation	3 Meetings + 80% Videos	3 Meetings + 100% Videos
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.813***	0.615***	0.513***	0.504***	0.442***	0.405***
	(0.026)	(0.033)	(0.034)	(0.034)	(0.034)	(0.033)
F-statistic	975.3	351.8	233.0	223.7	173.8	149.8
R-squared	0.713	0.478	0.381	0.376	0.321	0.298
N	450	450	450	450	450	450

Source: Video capsule completion data comes from the log file of the mobile app. Consulting meeting completion data comes from the consultants' log books.
Note: As mentioned in Section 7.3, this table presents the Intention-to-Treat (ITT) impact estimates of treatment assignment on take-up under alternative definitions. The outcome variable in each column is a dummy indicating that the trainee did not drop out of the program, therefore completing the three business consulting meetings plus some percentage of the mobile app video capsules. Impacts on take-up using definitions that only require completing video capsules are not tested because no training participant completed video capsules after failing to hold a business consulting meeting. All regressions control for strata dummies. Standard errors are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.9: The Effects of Digital Training on Marketing Practices

	Discount Sales	Calls Clients by Name	Client Contact List	Flyers	Digital Payments	WhatsApp Messaging	WhatsApp Orders
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	0.086**	0.062**	0.078*	0.105**	0.029	0.055	0.066*
	(0.040)	(0.027)	(0.043)	(0.044)	(0.028)	(0.039)	(0.036)
R-squared	0.084	0.100	0.081	0.166	0.100	0.081	0.103
Control Mean at Baseline	0.798	0.879	0.611	0.466	0.081	0.789	0.777
Observations	450	450	450	450	450	450	450

Source: Data for this table comes from the follow-up survey of the experiment.
Note: As mentioned in Section 7.5, this table presents the Intention-to-Treat (ITT) impact estimates of digital training on the store owners' marketing practices. The outcome variable in each column is a dummy for one of the marketing practices that make up the marketing index, which are described in Table F.1 of Appendix F. All regressions control for strata dummies. Standard errors are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.10: The Effects of Digital Training on Finance Practices

	Daily Sales Records	Monthly Cash Flow	Monthly Budget	Inventory Control	Re-Order Point	Mixes Ex-penses
	(1)	(2)	(3)	(4)	(5)	(6)
Treatment	0.040	0.083**	0.039	0.072*	0.032	0.018
	(0.043)	(0.039)	(0.043)	(0.038)	(0.024)	(0.047)
R-squared	0.088	0.075	0.071	0.067	0.069	0.082
Control Mean at Baseline	0.640	0.725	0.692	0.826	0.960	0.543
Observations	450	450	450	450	450	450

Source: Data for this table comes from the follow-up survey of the experiment.
Note: As mentioned in Section 7.5, this table presents the Intention-to-Treat (ITT) impact estimates of digital training on the store owners' financial management practices. The outcome variable in each column is a dummy for one of the finance or inventory management practices that make up the finance index, which are described in Table F.1 of Appendix F. All regressions control for strata dummies. Standard errors are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.11: The Effects of Digital Training on the Days and Hours of Store Opening

	Opening Days			Opening Hours			
	Weekdays	Saturday	Sunday	Weekdays	Saturday	Sunday	Total
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Treatment	-0.003	0.005	0.008	-0.261	0.002	-0.185	-1.487
	(0.019)	(0.011)	(0.036)	(0.191)	(0.274)	(0.392)	(1.424)
R-squared	0.078	0.069	0.094	0.082	0.064	0.058	0.073
Control Mean at Baseline	5.000	0.992	0.841	10.7	9.8	6.9	70.4
Stores	539	539	539	539	539	539	539
Exited by the Endline	53	53	53	53	53	53	53
Missing Hours	19	19	19	19	19	19	19
Observations	467	467	467	467	467	467	467

Source: Data for this table comes from the follow-up survey of the experiment.
Note: Notes: As mentioned in Section 7.5, this table presents the Intention-to-Treat (ITT) impact estimates of digital training on the stores' opening days and hours. All regressions control for strata dummies. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

Table H.12: Digital Training Effects on Employee Counts and the Decision to Sell Complementary Products In-Store

	Count of Paid Employees	Count of Unpaid Family Members	Number of Times the Owner Has Changed Employees	Owner Sells Complementary Products
	(1)	(2)	(3)	(4)
Treatment	0.005	0.037	-0.056	-0.007
	(0.066)	(0.081)	(0.213)	(0.039)
R-squared	0.150	0.104	0.237	0.080
Control Mean at Baseline	0.729	0.680	1.249	0.752
Stores	539	539	539	539
Exited by the Endline	53	53	53	53
Missing	17	17	17	17
Observations	469	469	469	469

Source: Data for this table comes from the follow-up survey of the experiment.
Note: Notes: As mentioned in Section 7.5, this table presents the Intention-to-Treat (ITT) impact estimates of digital training on employee counts and the decision to sell complementary homemade products, such as salsa, at the store level. The outcome variable are employee counts in Columns (1) and (2), an indicator for the event that the store owner changed employees over the last six months in Column (3), and an indicator for the event that the owner sell complementary products in the store in Column (4). All regressions control for strata dummies. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.

I Analysis of Mobile App Data and Consultant Log Books

I.1 Descriptive Trends in Engagement with the Mobile App

Figure I.1 presents descriptive trends in the digital engagement of training participants with the contents of the program, which are constructed from the log file of the mobile app and from the consultants' log books, which contain their meeting schedules and calendar availability. First, Panel A shows that completion rates of the video capsules decline with their date of release to the public. In particular, 99.4 percent of training participants completed the first introductory capsule, released on October 1, 2021, before all other digital contents. In contrast, only 50 percent of them completed the last video capsule of the training program, released on December 3, 2021.[40] This pattern is driven by participants who do not complete all three business consulting meetings and therefore do not fulfill the requirements to graduate from the program,[41] as their engagement with the last training capsule drops to exactly zero. For comparison, 69.2 percent of the training graduates complete the last video capsule. Thus, train-

[40]The digital training program under study has a high completion rate compared to other digital courses, as reported in the literature. According to Banerjee and Duflo (2014), only 2-14 percent of UPenn Coursera course takers show activity in the last week of the course, and only 11 percent complete an MIT course on global poverty on the edX platform.

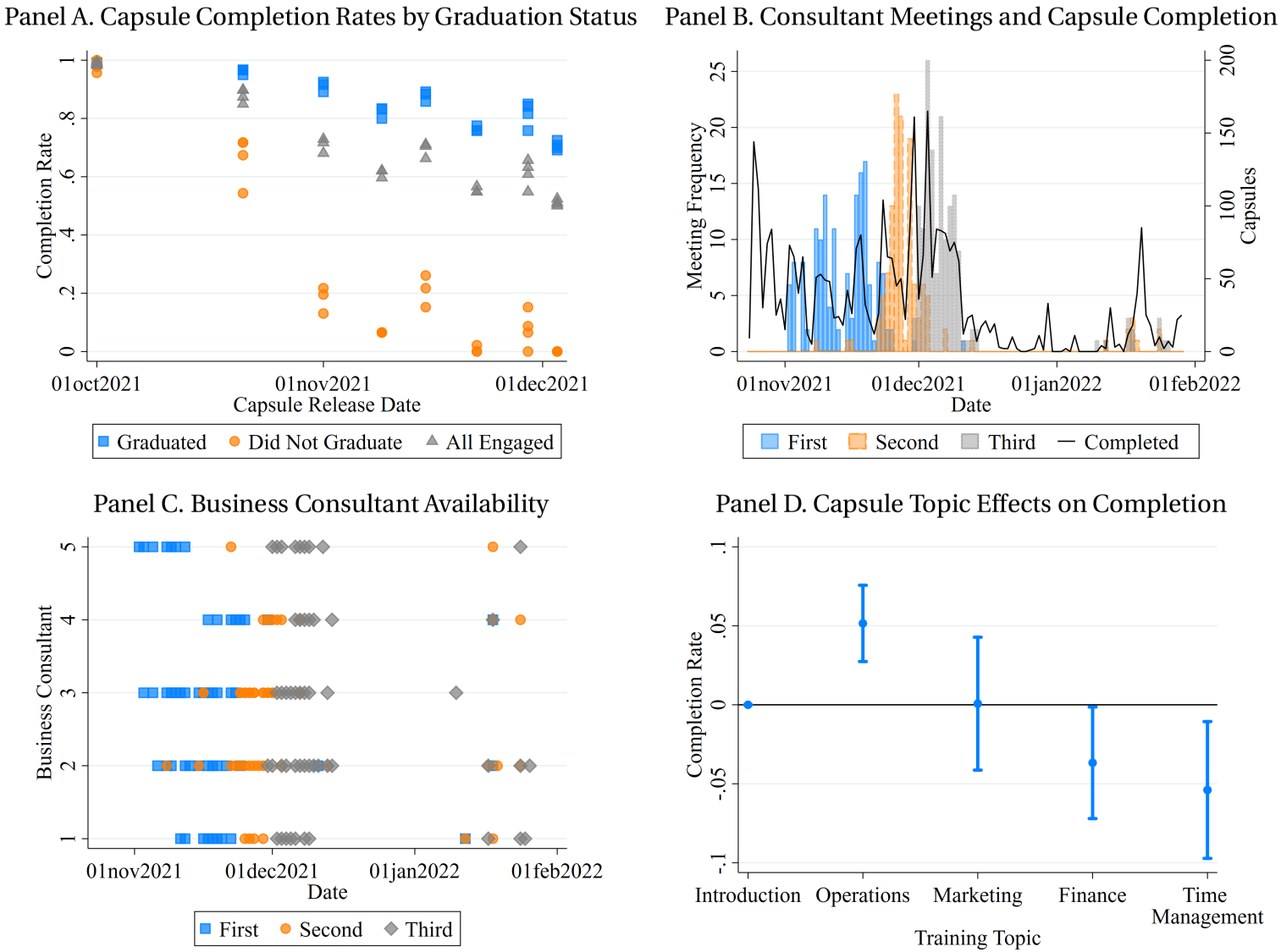
[41]The requirements for graduation consist of completing the three business consulting meetings and watching at least 70 percent of the video capsules.

ing participants interacting with business consultants are disproportionately likelier to persist in watching video capsules than others.

Second, the timing of the business consulting meetings closely correlates with the timing of engagement with the app's video capsules, and the timing of the business consulting meetings corresponds to the calendar availability of the consultants. These findings empirically justify the IV strategy from Section 8.1. Specifically, Panel B presents time patterns in the dates of video capsule completion and the dates of the first, second, and third business consulting meetings. The correlation coefficient between the frequency of consulting meetings and the number of video capsules participants watch daily is 0.6. Then, Panel C shows the calendar availability of business consultants, which visually corresponds to the timing of the business consulting meetings in Panel B. Additionally, while business consultants have correlated availability (or lack thereof) during the December holiday period and weekends, their availability is spread on very different dates in November, early December, and early January.

Finally, the figure analyzes whether engagement with digital contents on the mobile application correlates with the treatment effects reported in the main body of the paper. Panel D shows the point estimates and 95% confidence intervals from a capsule-level regression of completion rates on training topic dummies and a release date trend to account for dropout effects, where the reference category are the introductory training capsules. Marketing and finance, the two practices for which the intervention had significant effects, are not particularly engaging topics for trainees. In contrast, video capsules related to the topic of operations are significantly more engaging than all other training materials, despite the absence of detectable effects on operations. Finally, the least engaging topic is time management, which is consistent with the lack of detectable effects of the intervention on this practice. These results show that the treatment effects of the training program reported elsewhere do not closely correlate with the participants' engagement with digital contents. Therefore, engagement with the digital platform alone is unlikely to underlie the treatment effects on knowledge, business practices, store sales, and profits, further highlighting the need for the one-on-one component of training.

Figure I.1: App Engagement and Business Consultant Meetings



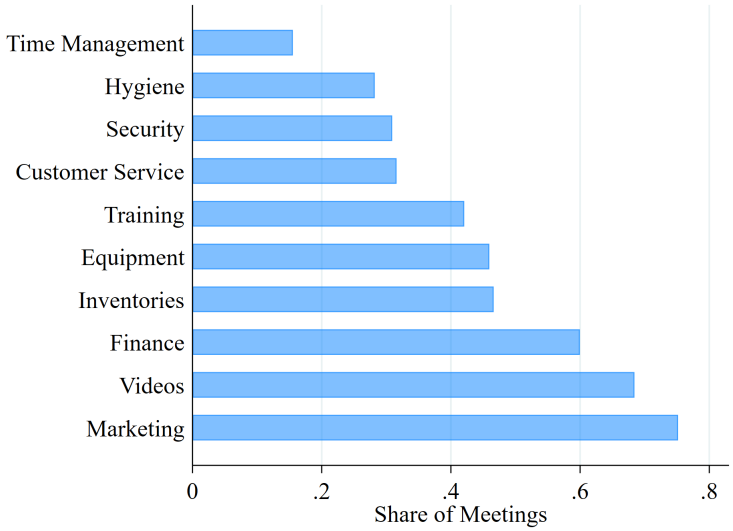
Source: Authors' analysis based on data from the log file of the mobile application and their log books.
Note: This figure shows descriptive trends in engagement with the mobile app and temporal variation in capsule completion rates and tele-meeting frequency, as described in Appendix I.1. Panel A presents the completion rates for the 28 video capsules of the training program by graduation status for the sample of 166 store owners who engaged with the mobile app on at least one occasion, according to the app log file. The bars in Panel B present the number of first, second, and third online business consulting meetings and video capsules completed each day by training participants. Panel C presents the availability for meetings of each business consultant participating in the training program, with markers representing open dates. Panel D presents the coefficients and 95% confidence intervals from a capsule-level regression of completion rates on training topic dummies and a time trend, where standard errors are robust to heteroskedasticity of unknown form.

I.2 Text Analysis of the Consultant Log Books

This section analyzes the topical content of the one-on-one business consulting meetings. To this end, it utilizes meeting minutes from the consultants' log books. These minutes contain a text transcript of the words spoken in each meeting. While the training program design envisaged three meetings per participant–one for diagnostics and two follow-ups, take-up was imperfect and declined over time. Thus, the content of 217 diagnostic meetings, 202 first follow-ups, and 195 second follow-ups is analyzed.

Meeting content is examined using a rule-classification algorithm that relies on keyword lists for 10 training topics, as described in Table I.1. Figure I.2 presents the share of meetings in which keywords associated with each topic are mentioned. The most discussed topics are marketing and finance, precisely those for which significant impacts on business practices are observed. Furthermore, consultants discussed the video capsules in most meetings between training participants and business consultants.

Figure I.2: Share of Business Consulting Meetings where Keywords are Mentioned by Topic



Source: Authors' text analysis based on textual transcripts of the business consulting meetings from the consultants' log books.
Note: As described in Appendix I.2, each training participant held three personalized meetings with a professional business consultant: one meeting for diagnostics and two follow-ups. The figure summarizes the topical content of 217 diagnostic meetings, 202 first follow-ups, and 195 second follow-ups. The list of topics presented is based on the tailored list designed by the business consulting company for the training program. Each bar represents the share of meetings in which the topic is discussed, constructed using a rule-classification algorithm that relies on the keyword lists described in Table I.1.

Table I.1: List of Keywords by Business Consulting Topic

Category	Question
Marketing	value added, promotional sales, digital payments, placing offers, home delivery, sending product recipes, WhatsApp, customer list
Finance	financial planning, profit margin, revenue and expense control, profitability, daily cash flow, personal expenses
Inventories	inventories, reorder point, maximum and minimum stock levels
Hygiene	hygiene, wash, plague control

Continued on next page

Table I.1: List of Keywords by Business Consulting Topic (continued from previous page)

Business Consulting Topic	Keywords
Customer service	customer service, complaint box
Training	personnel training, employee training, employee education
Security	patrimony, safety, crime, security device, extortion
Equipment	maintenance, disconnecting, equipment, freezing, cooling, refrigerating, freezer, cooler, refrigerator
Videos	app, video, capsules
Time	women micro-entrepreneurs, support network, personal development, work-life balance, female leadership

Source: Authors' analysis.
Note: This table provides a detailed list of the keywords included in each business consulting topic, as described in Appendix I.2.

Furthermore, these topical shares are used to test the hypothesis that consultant busyness affects the training content discussed in the meetings. Specifically, the word share of each topic in Table I.1 at the meeting level is regressed on consultant busyness, which is defined as the number of other meetings held by the consultant on the same date. The parameter β from the following regression model is estimated via OLS for each consulting topic:

$$\text{Topical Share}_{mit} = \alpha + \text{Busyness}_{c(i),t}\beta + \gamma_{c(i),o(m)} + \delta_t + \lambda_i + \varepsilon_{mit}, \tag{I.1}$$

where $\text{Topical Share}_{mit}$ is the word share in consulting meeting m of trainee i at date t, $\text{Busyness}_{c(i),t}$ is the number of meetings in the consultant's calendar at t, $\gamma_{c(i),o(t)}$ is a fully-interacted set of consultant×meeting order (i.e., first, second, or third) fixed effects, which capture variation in the topical content of the consulting meetings arising from the consultant-specific approach to consulting and from the purpose of the meeting (i.e., baseline, follow-up, or endline), δ_t are time dummies capturing time variation in the topical content of consulting meetings, and λ_i are trainee fixed effects capturing the consulting needs of each store owner. The mapping from meetings to meeting order is denoted by o, and the mapping from trainees to consultants is denoted by c. Standard errors are clustered at the store owner level, but the results are robust to clustering at the consultant level.

As reported in Table I.2, there is no statistically significant evidence of a shift in topical content resulting from the consultant's availability. While this evidence does not constitute causal evidence, it does reveal the absence of a correlation between both variables.

Table I.2: The Effect of Busyness on Meeting Content

	Marketing	Finance & Inventories	Operations & Training	Time Management	Videos
	(1)	(2)	(3)	(4)	(5)
Busyness	0.005	-0.012	0.002	-0.001	0.006
	(0.005)	(0.007)	(0.004)	(0.002)	(0.005)
R-squared	0.752	0.707	0.617	0.787	0.642
N	514	514	514	514	514

Source: Data for this table comes from the textual transcripts of the business consulting meetings and the consultants' schedules recorded in their log books.
Note: As mentioned in Appendix I.2, this table examines whether consultant busyness affects the training content discussed in the meetings. The outcome variable in each column is the word share of each business consulting topic at the meeting level. The "Operations & Training" topic includes the words associated with hygiene, customer service, equipment, security, and training. All regressions control for consultant×meeting type fixed effects, date dummies, and store owner fixed effects. Standard errors are clustered at the store owner level and are robust to heteroskedasticity of unknown form.
*** Significant at 1%. ** Significant at 5%.* Significant at 10%.