Building High-Growth Firms Through Training the Owner vs Through Linking the Firm to Business Service Markets: An RCT in Nigeria

Concept Note

Application for Implementation Funding (Due Date: June 30, 2017)

Competitiveness Policy Evaluation Lab - ComPEL

Abstract (200 words)
Many small firms lack the finance and marketing skills needed for firm growth. The standard approach in many World Bank-supported programs has been to attempt to train the owner to develop these skills, through business training sessions or personalized consulting services. However, an alternative is to link firms to these skills in the market through insourcing workers with these skills, or outsourcing these tasks to professionals specializing in these services. We test which approach works best to grow small firms through a randomized experiment in the context of the Growth and Employment Project in Nigeria. 2000 firms with 2-15 workers each will be randomized into five groups of 400 firms each: a control group, a group given business training for the owner, a group given consulting services, a group linked to HR specialists who will find a worker to insource these skills, and a group linked to companies with professionals specializing in business services to outsource these skills. Impacts on firm sales and employment growth will then be measured. This will be the first test of this market-based approach to skill-development in firms, and inform how such programs are run in Nigeria and in other World Bank projects.
# Table of Contents

Abstract (200 words) ............................................................................................................................................... 1

Table of Contents .................................................................................................................................................. 2

1. Background (0.5 - 1 page) ............................................................................................................................... 3

2. Intervention to be Evaluated (0.5 - 1 page) ....................................................................................................... 4

3. Theory of Change (1 figure plus 1-2 paragraphs) ............................................................................................ 5

4. Literature Review (1 page) ................................................................................................................................. 8

5. Hypotheses and Evaluation Questions (0.5 page) .......................................................................................... 10

6. Evaluation Design and Sampling Strategy (1-2 pages) .................................................................................. 10
   6.1 Treatment and Control Groups ..................................................................................................................... 11
   6.2 Sample Size Calculations ............................................................................................................................ 12

7. Data Collection (1 -2 pages) ............................................................................................................................ 13
   7.1 Quantitative Instruments .............................................................................................................................. 13
   7.2 Management of Data Quality ....................................................................................................................... 14
   7.3 Ethical Issues .............................................................................................................................................. 15
   7.4 Qualitative Instruments ............................................................................................................................... 15
   7.5 IE Implementation Monitoring System ....................................................................................................... 15

8. Data Processing and Analysis (1-2 pages) ....................................................................................................... 15
   8.1 Data Coding, Entry, and Editing (optional) ................................................................................................. 15
   8.2 Model Specification for Quantitative Data Analysis .................................................................................... 16

9. Study Limitations and Risks (0.5 page) ......................................................................................................... 18

10. Policy Relevance and Impact (1 page) ............................................................................................................ 18

11. Dissemination Plan (0.5 page) ....................................................................................................................... 19

12. Impact Evaluation and Related Teams ......................................................................................................... 20

13. Budget ........................................................................................................................................................... 22

14. Milestones, Deliverables, and Timeline ....................................................................................................... 22

15. References ..................................................................................................................................................... 23

16. Annexes ......................................................................................................................................................... 24
1. Background (0.5 - 1 page)

Nigeria enjoyed a period of sustained growth during the 2000s as a combination of high oil prices and domestic reforms enabled growth rates exceeding 6 percent per year. However, the recent drop in oil prices caused Nigeria to enter into recession in 2016, its worst economic performance in thirty years. Diversifying into non-oil sources of growth, including developing the private sector, is crucial for the continued growth of the economy. Nigeria has a strong reputation for entrepreneurship, with Nollywood and the ICT sector being particularly prominent. Yet more than 99 percent of all firms in Nigeria still consist of only the owner, and there is a need to better identify and grow promising firms.

The Nigeria Growth and Employment (GEM) project (P103499) is a US$160 million World Bank project with the development objective of increasing firm growth and employment. It aims to do this indirectly through improving the investment climate in five economic sectors – light manufacturing, construction, hospitality, ICT and entertainment – and directly, by offering programs to improve the performance of firms in these sectors. These direct support activities are channeled through the Business Innovation and Growth (BIG) Platform, which was launched in 2016 and through which Micro, Small and Medium Enterprises (MSME) apply for these programs. By December 2016, when the registration was closed for the first year, 48,167 firms had registered on the BIG Platform throughout the country.

The inability of firms to operate with advanced business practices, in particular to effectively manage finances and market products, is seen as key constraint that inhibits the growth of small firms. An additional (and related) challenge is the lack of specialization across business functions. Being able to focus the resources of each functional unit (e.g., finance, HR, production, marketing, sales, etc.) not only allows firms to efficiently scale up, but also gives owners the ability to delegate the more standardized ‘operational’ practices while freeing up time for them to focus on ‘growth’ related activities. McKenzie and Woodruff (2017) show that small firms with better business practices earn more, are more likely to survive, and grow faster. What is less clear is the best way for firms to overcome these constraints. Experience with standard business training programs has been mixed (McKenzie and Woodruff, 2014), and it can be difficult to get business owners to take time away from their firms to attend lengthy trainings. Further, even if an owner attends training, it is unlikely she will have the time to personally implement all of her newly acquired skills across multiple business functions. Indeed, being a “jack-of-all-practices” will be especially difficult as the firm starts to grow and scale its operations.

As an alternative to training, consulting services also have the potential to improve business practices and, in turn, increase employment (Bruhn, Karlan and Schoar, 2017) and productivity (Bloom et al, 2013). In addition, there are other ways firms can augment skills such as through insourcing or outsourcing services. Either approach could be effective at both improving business practices and increasing functional specialization so owners can delegate and focus on growth activities. Nonetheless, despite the potential returns, firm owners may be reluctant to go to the marketplace and pay for these types of business services (e.g., consulting, insourcing, outsourcing) because they are too expensive, there is a lack of information about providers, or the quality is uncertain. The interventions designed below therefore aim to test the training approach against different business service marketplaces.
The research design set out here has been discussed and agreed upon with the Project Implementation Unit (PIU) of the Government of Nigeria. Moreover, feasibility has been demonstrated with the first 943 firms now randomized into experimental groups and beginning their respective interventions.

**Intervention to be Evaluated (0.5 - 1 page)**

The target population for this intervention is firms in the five priority industries (light manufacturing, construction, ICT, hospitality and entertainment) who meet the following criteria:

i. They show interest in growing their firms by applying to the BIG platform.

ii. They then attend an induction workshop where they receive a baseline survey and are scored on their current level of business practices. Firms that receive a score of below 5 out of 10 are excluded (with some offered basic training), while those with scores above 8 that may have less room to improve are also excluded (with some offered consulting services or grants).

iii. They have 2 to 15 workers, and are not already insourcing or outsourcing both their financial and marketing functions.

iv. They are located in Abuja or Lagos (where we have been able to identify sufficient human resource specialists and business service providers).

These criteria aim to select firms with high-growth potential, who have scope to improve and grow, and who operate in a location where linkages to markets are possible.

Implementation is occurring through a project implementation unit (PIU) set up under the Nigerian Federal Ministry of Industry, Trade and Investment (FMITI). Firms which meet the eligibility criteria will be offered one of the following four interventions:

1) **Business Training**: The objective is to strengthen the capacity of SMEs by providing them with a mix of online and in-class training. The curriculum is based on the IFC Business Edge and adapted to the local context. The core modules are in financial management, marketing, and human resource management. Firms have to complete a minimum of 12 days in-class along with online courses. The business owners can choose the dates and locations for the modules.

2) **Business Consulting**: 88 hours (11 full days) of business consulting services provided by consultants over 6 to 9 months, meeting at least once a month. The initial visits (about 8 hours including site visits) will help the MSME define a Need Assessment and a Growth Strategy. The consulting services provider will then propose a list of business enhancing activities (Scope of Support) for the remaining 80 hours. These activities are personalized to the MSME but typically focus on Management, Finance, Sales & Marketing, Operations and Human Resources.

3) **Insourcing**: Firms in this group access an online marketplace to choose a Human Resource (HR) specialist from a list of vetted firms. This HR specialist will then help recruit an accounting worker or marketing worker to join the firm and perform tasks in the respective functional area. The firm will receive a wage subsidy that fully pays the cost of such a worker in the first few months but then gradually declines over 9 months (by which time the firm covers the whole wage).
4) **Outsourcing:** Firms in this group access an online marketplace to choose an Accounting firm or Marketing firm from a list of vetted firms. They will then outsource their accounting or marketing activities to this firm. As with insourcing, a subsidy will cover the cost of these services initially, which will be phased out over time.

These business development interventions are value-equivalent. That is, they have been designed so that the cost of offering each intervention is approximately the same, at around $2,000 per firm. (The only exception is consulting services which cost twice the price of the others.)

The main outcomes of interest are i) whether the business practices of the firm improve, and whether this persists once the intervention ends; and ii) firm growth, as measured by sales and employment (in line with the project development objectives). In addition, since the insourcing and outsourcing interventions aim to link firms to an online marketplace, a key outcome will be whether these approaches can build interest in business service marketplaces in developing economies (i.e., firms will leave ratings for the providers they have used, with the goal of enabling providers to develop reputations on the platform over time and signal quality to future prospective firms).

We have spent the past 1.5 years designing these interventions and collaborating with the Government of Nigeria to ensure their buy-in for the randomization design, as well as building the vetted marketplaces of providers for these different interventions. Given that many impact evaluations around large government projects involve substantial uncertainty and delays which threaten the timeline of ComPEL funding, we believe it is important to emphasize that many of the key concerns facing impact evaluations in this area have been resolved:

- **a)** The interventions are designed, and are now live for a first batch of approximately 190 firms in each treatment group (for a total first year sample of 943).
- **b)** Random assignment has already occurred for half our desired sample, and has been agreed by the government.
- **c)** Take-up is high: more than 90% for the consulting, insourcing and outsourcing interventions, which launched in April 2017. Take-up numbers for the training intervention are still being collected.

2. **Theory of Change** (1 figure plus 1-2 paragraphs)

The different interventions propose alternative ways of building skills in the firm to generate high growth. All of them are hypothesized to improve business practices in the firm, which in turn will lead to employment growth, higher profitability, and greater sales. The pathway from business practices to firm growth will depend on what type of practices are employed (Anderson et al, 2016): marketing practices are expected to grow the firm through generating new clients and increasing the demand for the firm’s products; whereas financial practices are expected to help the firm grow by lowering production costs, identifying which products are most profitable to focus on, and allocating capital more efficiently.
A second intermediate outcome that could follow from developing business skills is increasing access to sources of financing for making capital investments. Because firms will be better equipped, they are more likely to get access to loans (or other types of financing, such as equity) from financial institutions.

In addition to operating through better business practices and improved access to finance, the interventions may work through two other intermediate channels. The first is through changing the use of the owner. Although training and consulting may lead the owner to run her business more efficiently, these interventions may also cause the owner to devote more time to practices at an ‘operational’ level (be it in finance, HR, production, marketing or across all functions), which takes time away from ‘strategic’ level tasks. In contrast, insourcing or outsourcing some of their business processes could both improve specialization across functional units and free the owner to spend more time on product innovations, new market development, strategic planning, and other investments important for high growth. In other words, we expect owners to delegate more and be a “jack-of-all-practices” less as they shift their time from managing many different operational tasks to focusing on a key set of growth related activities.

Finally, having an initial experience with a business service marketplace may induce the owner to overcome her inertia (i.e., reluctance due to high costs, information frictions or quality uncertainty) towards hiring an outside company for business skills development. And so, the linkage to the market for local business services – which occurs through the consulting, insourcing and outsourcing interventions – may encourage the firm to return to the same market (or a new one) to procure other business services necessary for growth.
Regarding the outcomes of interest and the data sources, it should be noted that two main sources will be used: firm surveys and data captured by the BIG platform (called data admin). Indeed, the GEM program is heavily relying on the BIG platform to capture all information. For instance, business service providers (consulting, insourcing and outsourcing) are required to track and enter the progress made by the firms (i.e., business practices completed).

**Table 1: Outcomes of Interest for the Impact Evaluation**

<table>
<thead>
<tr>
<th>Category</th>
<th>Outcome</th>
<th>Definition</th>
<th>Measurement Level/source</th>
<th>Time/Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Take up</strong></td>
<td>Training Attendance</td>
<td>The share of invited entrepreneurs that attended training and complete the 12 in-class training days</td>
<td>Admin data</td>
<td>Rolling basis</td>
</tr>
<tr>
<td></td>
<td>Consulting Usage</td>
<td>Share of invited entrepreneurs that use their assigned consultants and complete the 88 hours</td>
<td>Admin data</td>
<td>Rolling basis</td>
</tr>
<tr>
<td></td>
<td>Insourced worker</td>
<td>Share of firms that use HR consultants to hire a worker for 9 months</td>
<td>Admin data</td>
<td>Rolling basis</td>
</tr>
<tr>
<td></td>
<td>Outsourced marketing or accounting</td>
<td>Share of firms that use linkage to business services marketplace to outsource marketing or accounting</td>
<td>Admin data</td>
<td>Rolling basis</td>
</tr>
<tr>
<td>Category</td>
<td>Outcome</td>
<td>Definition</td>
<td>Measurement Level/source</td>
<td>Time/Frequency</td>
</tr>
<tr>
<td>-------------------</td>
<td>------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>----------------------------------------------------------------</td>
<td>-------------------------------------</td>
</tr>
<tr>
<td>Business practices</td>
<td>Business practices index</td>
<td>Proportion of a list of business practices - in particular marketing and financial management activities - that the firm is implementing</td>
<td>Survey data and admin data</td>
<td>Rolling basis</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Baseline and Follow-up Surveys</td>
</tr>
<tr>
<td>Time Use of Owner</td>
<td>Time spent on strategic tasks</td>
<td>Hours in a typical week spent on strategic tasks for business like new product development, long-term planning, human resources, getting external funding, etc.</td>
<td>Survey data</td>
<td>Follow-up surveys plus time logs</td>
</tr>
<tr>
<td>Firm Performance</td>
<td>Sales</td>
<td>Monthly and annual revenue of the firm</td>
<td>Survey</td>
<td>Baseline and Follow-up Surveys</td>
</tr>
<tr>
<td></td>
<td>Profits</td>
<td>Monthly and annual profits of the firm after covering expenses</td>
<td>Survey</td>
<td>Baseline and Follow-up Surveys</td>
</tr>
<tr>
<td></td>
<td>Employment</td>
<td>Number of paid employees                                                                                                                                  Wage bills for paid employees</td>
<td>Survey + Physical headcount</td>
<td>Baseline, Follow-up Surveys, Monitoring visits</td>
</tr>
<tr>
<td></td>
<td>Survival</td>
<td>Whether the business still operates</td>
<td>Survey + Physical visit</td>
<td>Baseline, Follow-up Surveys, Monitoring visits</td>
</tr>
</tbody>
</table>

3. Literature Review (1 page)

There is now a large literature on business training in developing countries, a small literature on consulting services, and no literature testing insourcing and outsourcing interventions. The principal investigators on this project are key contributors to this literature.

In terms of business training, McKenzie and Woodruff (2014) summarize the lessons from 14 randomized experiments testing classroom-based training in developing countries. They note that many of the courses are very short in length, and that the majority of studies have focused on the self-employed or firms with only one or two workers. This existing evidence base does show the first key step in the causal chain above: most training programs do find significant impacts on business practices. The link from business practices to firm outcomes is shown to hold across a range of countries in McKenzie and Woodruff (2017). Nonetheless, the full link from business training to better practices to sales and employment growth is not seen in many existing experiments. A key reason has been that the change in business practices from short training programs has been relatively small.

Several newer studies offer further lessons on business training. The Business Edge program that will be used here was tested in Togo by Campos et al. (2017). They find that 48 hours of training in this program resulted in a significant 5 percentage point increase in the number of business practices implemented, which led to a 11 percent increase in profits, which was not statistically significant. These concerns about the relatively limited effectiveness are a motivation for us testing alternative approaches to
capacity building in small firms. A second recent study of interest is Higuchi et al. (2016), who offer business training to firms with 5 workers in Tanzania (albeit with a small sample size), finding significant impacts on business practices and performance three years later. Two lessons from this work are the possibility that training may be more effective with firms that have a few workers, and that it can take time for impacts to show up, so there is a need to measure outcomes over several years.

One response to the relatively limited change in business practices achieved through standard business training has been to use consultants to offer more personalized advice to firms. Intensive and expensive consulting services have had sustained impacts on large firms in India (Bloom et al, 2013) and on SMEs in Mexico (Bruhn et al, 2017). In contrast, consulting for micro firms actually had a short-term negative effect in Ghana (Karlan et al, 2015). These studies suggest that it may be more difficult for consulting to work for micro firms, and that these interventions can be relatively expensive to implement. One further potential limitation of some forms of consulting is that the engagements are often time-limited, with consultants providing advice on actions the firm should take, but then leaving it up to the firm to implement this advice by themselves.

In contrast, we are not aware of any studies which test interventions that enable firms to either insource or outsource core business skills like marketing and accounting. We believe a key difference with these interventions are that rather than just telling the firm owner what to do, these interventions actually involve having someone with expertise implement these practices for the firm. This raises the possibility of the change in business practices being much larger. Moreover, since this is intended to be an ongoing and continuous usage, the effects may last longer than the “advise and leave” model of consulting. Further, the insourced workers or outsourced professionals will essentially be leading their designated business function. This should increase specialization across the firm and free up the owner’s time so she can focus less on operational tasks and more on growth related activities.

While there is not yet a literature testing the proposed insourcing and outsourcing interventions, we believe these interventions will contribute to the fundamental question in the literature of “What is a firm?”, and in particular, of what determines the boundary of the firm. Examples include work by Coase and Williamson, who provide a transaction-costs based explanation; as well as contracting based approaches of Grossman, Milgrom, Hart, and Holmstrom. There is a descriptive literature which then looks at how firms decide whether to insource or outsource accounting and marketing, noting that an accountant is the most common and most trusted advisor for many SMEs, and that the trade-off between insourcing and outsourcing appears to be one of greater oversight, immediacy, and frequency of interaction with insourcing, versus possibly higher expertise and value with outsourcing (e.g. Everaert et al (2007), McGovern and Quelch (2005)).
4. **Hypotheses and Evaluation Questions**¹ (0.5 page)

_Hypothesis 1:_ All four interventions will lead to improvements in business practices in the participating firms.

_Hypothesis 2:_ These improvements in practices will generate increases in sales, profits, and employment.

_Hypothesis 3:_ The impact on business practices and firm growth will be larger from insourcing, outsourcing and consulting interventions than from business training of equivalent cost.

_Hypothesis 4:_ Insourcing and outsourcing will reduce the amount of time firm owners spend on operational tasks (e.g., in accounting and marketing), and increase their time spent on strategic tasks (e.g., in growth related areas).

_Hypothesis 5:_ Firms benefiting from one of the four capacity enhancement programs are more likely to access funds, in particular from financial institutions.

_Hypothesis 6:_ Firms benefiting from insourcing and outsourcing are more likely to continue using the service or keeping the insourcing employee after the end of the intervention than for consulting or training.

Main evaluation questions:

1) What is the impact of business training on business practices, and firm growth?
2) What is the impact of consulting services on business practices and firm growth?
3) What is the impact of linking firms to HR consultants to insource skills on business practices, and firm growth?
4) What is the impact of linking firms to professional marketing and accounting firms in the business services market on business practices and firm growth?

5. **Evaluation Design and Sampling Strategy** (1-2 pages)

To be included in the study, firms undertake the following steps:

Step One: apply online through the BIG platform in response to advertising campaign. McKenzie (2017) notes that requiring online application already screens on firms which are more sophisticated and likely to be plausible candidates for high-growth. Moreover, by applying for the program firms indicate their interest in developing their skills.

Step Two: pass an initial screening based on having complete data on the application, operating in one of the 5 GEM sectors, being 18 and older, and having more than one and fewer than 100 workers.

---

¹ Sections 5, 6, 7, 8, and 9, related to the IE design, follow the standards for impact evaluation concept notes defined by the World Bank Development Impact Evaluation unit (DIME).
Step Three: attend an induction workshop in Lagos or Abuja, and answer baseline survey at this workshop. This screens further on motivation and effort.

Step Four: have a score of between 5 and 8 out of 10 for business practices based on this screen, have between 2 and 15 workers, and not be already outsourcing or insourcing both marketing and finance functions. This generates a group of potential high-growth firms who are determined to grow, and have made it past the barrier of hiring other paid workers apart from the owner.

In the 2016 launch, more than 2,500 firms attended the induction workshops in Lagos and Abuja, of whom 943 firms passed these screening criteria and become the first part of the experimental sample. The total planned sample size is 2,000 firms.

Identification will then be by randomized controlled trial, with the sample of 2,000 firms randomized at the individual level into five groups of 400 each, stratified by induction workshop.

6.1 Treatment and Control Groups

Control group: 400 firms that passed the screening criteria, but which were not selected for any of the interventions. They will then be interviewed in follow-up surveys.

Business training group: 400 firms to be given the Business Edge training program, adapted for the Nigerian context. This will include a mix of in-person and online classes, and include classes in accounting, marketing, operations, and human resource management. Training is offered for free to the firms.

Consulting group: 400 firms to be offered consulting services. They will be assigned a consultant from a list of consultants selected by the program, and receive 88 hours each of consulting, spread over 6 to 9 months. The first phase consists in 8 hours of assessment and definition of activities to be implemented over the course of the consulting. The consultants will develop a Growth Plan, and then work with the firm to advise on actions to be taken to implement this. Consulting is offered for free to the firms.

Insourcing group: 400 firms to be linked to the online marketplace of Human Resource (HR) specialists. They can talk to several of them and select the one they prefer. This specialist will then find them a marketing or accounting worker. A subsidy will pay for the cost of using the HR specialist, and partially subsidize the cost of the worker over the first 9 months they are in the firm. The subsidy is set to be equal to 100 percent of the typical wage in the first few months, and taper down over time so that the firm gradually takes responsibility to continue paying the worker. Firms will leave “yelp-like” ratings for HR specialists, enabling these specialists to build reputations on the platform over time, and a market to operate.

Outsourcing group: 400 firms to be linked to the online marketplace of business service providers offering marketing professionals or accounting professionals on an outsourcing basis. Firm owners can talk to several of these providers, and select the one they prefer. The contracted professional (an expert in marketing or in accounting) will then start providing the agreed upon services, with a subsidy covering 100 percent of the cost over the first few months, and tapering down over time so the firm gradually
covers more and more of the outsourcing cost. Firms will leave “yelp-like” ratings for the service providers, enabling a market with reputations to develop over time.

### 6.2 Sample Size Calculations

The sample size is determined by the project budget and geographic distribution of applicants (firms applying from other parts of Nigeria will not be offered the insourcing or outsourcing treatments, but will still be randomized to control, grants, training, or consulting, and to date we have 730 control, 434 training, and 434 consulting outside of Abuja and Lagos – we will use this other sample to measure impacts of these first two treatments in those regions).

Our power calculations are then designed to determine the minimum detectable effect possible with this sample. We are in a better position for making these calculations than most studies because the 2016 application window has closed and gives us data on the initial 943 experimental firms. Moreover, based on the first batches, we have over 90% take-up for the consulting, insourcing, and outsourcing treatments (training take-up data not yet available). We therefore assume 90% take-up in these calculations. We report the minimum detectable TOT effect assuming this take-up rate.

<table>
<thead>
<tr>
<th>Table 2: Minimum Detectable Effect (80% power, 5% significance level)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Business Practices Score</td>
</tr>
<tr>
<td>--------------------------</td>
</tr>
<tr>
<td>Unit Level</td>
</tr>
<tr>
<td>Variable Mean</td>
</tr>
<tr>
<td>Variable SD</td>
</tr>
<tr>
<td>MDE (in SD)</td>
</tr>
<tr>
<td>MDE (as % of reference mean)</td>
</tr>
<tr>
<td>Total number of clusters</td>
</tr>
<tr>
<td>Total number of clusters per arm</td>
</tr>
<tr>
<td>Average number of firms per cluster</td>
</tr>
<tr>
<td>Total number of firms</td>
</tr>
<tr>
<td>Total number of firms required for 90% take-up</td>
</tr>
</tbody>
</table>
Take-up: as noted above, our preliminary data show 90% take-up rates. We therefore report the MDE in TOT terms based on this rate of take-up.

n.a. denotes not applicable, since randomization is at the individual level.

Notes:

Business practices: calculation is made using only a single round of follow-up data. MDE for the ITT is then 0.15, so for the TOT is 1.1*0.15 = 0.165. This is 0.22 s.d., or 2.6% increase in the mean. Since the score is on a 10-point scale, this is equivalent to a 0.02 improvement in the proportion of practices implemented. This is less than half the size found in business training experiments cited in the literature review.

Employment: power calculations assume Ancova estimation, controlling for baseline value of employment. Autocorrelation is assumed to be 0.5. MDE is then 0.43 workers², so a TOT of 1.1*0.43 = 0.47 workers. This is 0.18 S.d., or a 4.3% increase on the control mean. For employment we believe the increase in the number of workers is the most useful metric. 0.47 workers increase in employment will occur if half the firms hiring an insourced worker keep this worker on, even if they do not grow enough to hire more workers. McKenzie (2017) finds high-growth enterprises achieve employment gains of 4-5 workers per firm from winning the business plan competition, so we are only trying to detect increases one-tenth of that size.

Log monthly sales: power calculations assume Ancova estimation, controlling for baseline value of sales. Autocorrelation is assumed to be 0.5. MDE for the ITT is 0.23, so TOT is 0.25 log points, or a 25% increase in the control mean. We aim to reduce this further through three steps: i) controlling for baseline covariates like sector, business practices, and employment size that can soak up some of the variation in size and reduce heterogeneity; ii) budget allowing, use multiple measurements of monthly sales within a given follow-up period as in McKenzie (2012); and iii) reduce measurement error and hence noise by utilizing a cross-checking survey technology developed by PI Stephen Anderson.

6. Data Collection (1 -2 pages)

7.1 Quantitative Instruments
The evaluation will rely on the following sources of quantitative data:

1) Survey data
   a. Baseline survey collected as part of the online application, and at the induction workshop: this survey will collect information on the background of the firm owner, the current business practices of the firm, sales and profits, main products, and other such information. This will be used to determine whether firms qualify for selection into the

\[ \text{sampsi 4.22 4.65, sd1(2.51) r01(0.5) pre(1) post(1) n1(400) n2(400)} \]
program, and whether they meet the additional criteria for inclusion in our experimental sample. In addition, baseline variables will be used as controls to increase statistical power.

b. Follow-up surveys: we plan 3 rounds of follow-up surveys, depending on funding availability. The first will take place beginning in September/October 2017, and measure impacts 6 months into the program, focusing on the changes occurring in the business while the intervention is in progress. The second will take place a year later towards the end of 2018, and the third towards the end of 2019.

2) Administrative data (through the BIG platform):
   a. Administrative data on take-up and drop-out will be recorded for each of the four treatments.
   b. Firms receiving the consulting, insourcing and outsourcing treatment must report on an online dashboard about the workplan for their staff, hours worked, and main activities undertaken.
   c. Each firm will receive at least two surprise audit visit under the program which will check whether firms are carrying out the activities they say they are doing.

In terms of measuring the key outcomes:

- Business practices will be based on detailed questions about a variety of different marketing, budgeting, accounting, financial management, human resources management, and other business practices used in the firm. These questions will build on those set out in McKenzie and Woodruff (2017), modified for the context of these firms. Firms will be asked for specific details and to see accounts books to obtain some objective measures of practices.
- Employment will be measured by asking the firm directly about employment in the follow-up surveys, as well as having the enumerators physically count how many workers are present in the firm at the time of the interview as in McKenzie (2017).
- Profits and Sales will be measured through survey questions. The standard direct questions on sales and profits in the last month recommended by de Mel et al. (2009) will be supplemented by electronic triangulation methods pioneered by Anderson et al. (2017). Depending on budget, we will also attempt a second measure of these within 1-2 months of the first, in order to improve power by averaging out seasonality and noise.

7.2 Management of Data Quality
Surveying will be carried out by the TNS Nigeria team who have successfully completed four rounds of similar firm surveys in Nigeria for the YouWin! evaluation carried out in McKenzie (2017). The PIs will be involved in training of their surveyors, and they follow standard procedures including backchecks and querying of unusual values. Electronic data collection with built in checks will be used to triangulate responses to different questions on sales and profits in order to minimize noise. To alleviate concerns about self-reporting of outcomes in surveys, several objective measures will be used. These include objective verification of particular business practices (like accounts books), physical counting of employees, and testing whether the firm has an operating website.
7.3 Ethical Issues
An informed consent statement will be read to participants and their voluntary participation in the follow-up surveys will be encouraged with small gifts. The questions will ask about standard business outcomes (sales, profits, employment, business practices), which do not raise special ethical considerations. We plan on seeking either approval for the survey from the Stanford IRB, or an exception to the IRB requirements since the unit of observation (a firm) is not a human subject.

7.4 Qualitative Instruments
The field coordinator and field assistants will regularly conduct qualitative case studies of firms through the course of the project. This information will be used to provide richer insights into how firms are responding to the different treatments, and will be used as an input in helping design the quantitative follow-up surveys. The PIs will also visit firms for in-depth qualitative interviews to better understand the way firms are interacting with the treatments, and to generate and refine hypotheses to test in the follow-up surveys.

7.5 IE Implementation Monitoring System
The IE monitoring system is already in place, and includes an online dashboard in which firms (business providers as well as MSMEs or workers in the case of insourcing) must fill out details of activities undertaken, work hours of the insourced or outsourced worker, etc. in order to receive payments. The monitoring of the MSMEs is done at different steps of the process: (i) by business providers and information reported on the BIG platform, (ii) by PIU staff and information changed or updated in the BIG platform, (iv) by independent monitors in charge of supervising all activities (consulting, training, grants, insourcing and outsourcing) and information reported on the Independent monitors dashboard.

There is also an administrative “implementation tracker” which tracks each firm carefully through each step of the process for participating in the different treatments. For example, for the insourcing treatment this records: whether the firm was emailed about acceptance into the program, whether it then logged into the dashboard, whether it signed an agreement with the HR firm, whether it set up a bank account to receive the subsidy payments, whether it signed the grant agreement, the date of the first disbursement of funds, whether it conducted a needs assessment with the HR firm to decide what type of worker is needed, whether a worker has been hired and a workplan entered for this worker, the results of phone audits to check the worker is present and what tasks they are doing, dates and amounts of payment, reasons for non-payment, reasons for dropping out in any step of the process, results from the surprise site visit, the work schedule of the worker, the main activities carried out by the worker, etc.

7. Data Processing and Analysis (1-2 pages)

8.1 Data Coding, Entry, and Editing (optional)
Electronic data collection will be used, with in-built consistency checks. A separate data entry system for the surveys is therefore not needed.
The procedure for handling missing data will depend on the reason the data are missing. If data on firm outcomes are missing because the firm has closed down, then employment, sales, and profits will be coded as zero. If they are missing because of item non-response, consistency checks in the surveys will be used to prompt the owner for their best estimate given the other information they have told us. If data are missing because of refusal, we will test whether the rate of refusal and baseline characteristics of who refuses differs by treatment status. If the differences are small by treatment status, we will operate under a missing-at-random assumption, and then examine robustness to other assumptions. If data are missing in a way that is strongly correlated with observables, we will use baseline data to impute the missing data, and again examine robustness to other alternatives.

8.2 Model Specification for Quantitative Data Analysis

• Describe the statistical method(s) that will be used to compare groups for primary and secondary outcomes (the specific equation should be included), any transformations to quantitative data. Specify whether the standard errors will be clustered or corrected.
• Specify what IE parameter of interest will be estimated (e.g., ITT, TT, MTE, LATE).
• Describe how you plan to address multiple hypothesis testing.
• Describe methods for additional analyses, including spillovers and subgroup analyses.
• Provide a list of any variables to be collected to check balance and correct for potential selection due to attrition, non-response, take-up rate issues (all theoretically important variables to be measured at baseline, including, those thought to be related to participation/dropout/non-response and the outcomes of interest).
• Lay out a strategy to follow up, test and correct for (if required) sources of bias (e.g., non-random attrition, non-response, endogenous take-up).
• State if you plan to register this IE (see selected links below)
  o AEA RCT Registry (https://www.socialscienceregistry.org/)
  o 3ie Registry (http://www.3ieimpact.org/evaluation/ridie/)

We believe that both the ITT and the TOT are likely to be parameters of policy interest. The ITT will provide information on which program offers the largest benefits when offered to firms. It will be estimated using an Ancova specification as in McKenzie (2012):

\[
outcome_{i,t} = \alpha + \beta_1 Training_i + \beta_2 Consulting_i + \beta_3 Insourcing_i + \beta_4 Outsourcing_i + youtcome_{i,0} + \sum_{s=1}^{S} \delta_s 1(iestrata s) + \epsilon_{i,t}
\]

In addition, the LATE/TOT will be estimated by instrumenting receipt of these different treatments with their random assignment. Key hypotheses to then be tested are i) no treatment has any impact \( (\beta_1 = \beta_2 = \beta_3 = \beta_4 = 0) \); ii) the treatments all perform equally well \( (\beta_1 = \beta_2 = \beta_3 = \beta_4) \); and iii) the new interventions outperform the traditional training and consulting approaches: \( (\beta_3 > \beta_1, \beta_3 > \beta_2, \beta_4 > \beta_1, \beta_4 > \beta_2) \). Since randomization is at the individual level, standard errors will only be clustered when multiple follow-up rounds of data are used (if this is done for sales and profits), in which case clustering will be done at the firm level.
Three methods will be used to address multiple hypothesis testing. The first will be to define an index of standardized z-scores for the primary firm growth outcomes of survival, profits, sales, and employment. Similarly, an index measure of business practices will form the main metric for examining impacts on business practices. Second, since we have four treatments, we will use F-tests to test for equality of the treatments, and that all treatments are jointly zero. Thirdly, when it comes to testing impacts on individual outcome measures, we will present both single-estimate p-values that can be used when comparing results for this outcome to those for the same treatment and outcome in other studies, as well as sharpened q-values that hold constant the false discovery rates when testing multiple treatments against multiple outcomes.

Two data transformations will be done for primary outcomes. For sales and profits, we allow for zeros while reducing the influence of outliers by winsorizing at the 99th percentile, and by also using the inverse hyperbolic sine transformation. For employment, in addition to the winsorized number of employees, we will also examine the binary outcome of reaching 10 or more employees.

We will examine heterogeneity in outcomes by gender of the business owner, and by the initial level of business practices. This heterogeneity will be pre-specified in a pre-analysis plan. We plan on registering the study in AEA RCT registry before follow-up survey data are collected.

The number of firms in the study (2000) is small relative to the universe of firms in Nigeria, and we expect spillovers to be limited given the size of the cities of Lagos and Abuja. But to examine spillovers we will attempt to geo-locate each firm, and then examine whether outcomes vary with the number of treated firms in the same sector within local neighborhoods of these cities.

The key variables used to check baseline balance will be: business practices, sales, profits, number of paid employees, whether they currently insource or outsource accounting services, whether they currently insource or outsource marketing services, whether they have ever used a human resources specialist, firm age, sector, owner’s gender, owner’s age, and owner’s education. We will also test whether take-up varies according to these variables, and whether there is differential survey non-response according to these variables.

We will test for non-random attrition and non-random survey item non-response based on these observable baseline variables, and by treatment status. If we observe significant differences by groups, we will employ several approaches to examine the robustness of our results to this, following the methodology used in McKenzie (2017). These will include: i) Lee bounds to account for differential attrition; ii) imputation of the missing observations; and iii) Behagel et al. (2015) bounds which use the amount of effort required to reach firms.
8. Study Limitations and Risks (0.5 page)
The study will employ a randomized experiment design, which is typically strong on internal validity. The main threat to internal validity would be if the control groups are affected by the treatments given to the control groups. In principle, there could be positive or negative effects. If control group firms learn from or mimic the better business practices occurring in the treatment groups, then we will underestimate the impacts of the treatment. In contrast, if the treatment firms grow by competing away business from the control firms, we would overestimate the treatment impact. Since the control firm group of 400 is small relative to the size of the Nigerian economy, we believe direct competition and linkages with the treatment group firms will be negligible. However, as noted above, we will measure and document this by geo-locating the firms, and measuring whether the treatment effects vary with the number of treated firms in the vicinity of control firms, conditional on the total number of control plus treatment firms in the neighborhood. As a result, we believe the risks to internal validity are low.

In terms of external validity: the program being delivered is being delivered by the government of the largest economy in Africa and is already being delivered at some scale. The institution delivering the intervention would therefore be the one that would also deliver it in any additional scale-up. Indeed, there is a possibility that the GEM project will be extended and additional funds will be asked by the implementing ministry (preparation in December-February for an additional financing by March 2018). The firms participated are ones that apply to a large government program offering growth opportunities, so are likely to be representative of the types of firms which would be the target of such programs. Unfortunately, other firm survey data from Nigeria are limited, with no recent large-firm survey or firm census, so it will be difficult to compare the characteristics of these firms to the overall population of firms in Nigeria, but we can also compare them to the YouWin! firms to see how they compare to another population of high-growth firms.

9. Policy Relevance and Impact (1 page)
The impact evaluation has two objectives:

(i) For the project: Evaluate the impacts of the project in line with the PDO indicators (employment growth and sales growth) and intermediate indicators (profits growth, business survival and changes in business practices). This information will be used to inform the result framework of the project as well as the Implementation Completion Report at the end of the project. The project will then be able to demonstrate its additionality based on a rigorous impact evaluation. This is particularly relevant for the GEM project as all the interventions mentioned above (consulting, training, insourcing, consulting) account for about two-third of the project’s proceeds;

(ii) For the government: Inform the government regarding the additionality of the GEM project. The results may be used by the government to ask for an additional financing. Indeed the project is closing in September 2018 but the Ministry may be looking at more funds from the World Bank to continue the on-going activities. The impact evaluation may also be used to
inform a possible restructuring. The most successful interventions – with regards to changes in business practices or bankable business plans – may be scaled up.

These impacts evaluations are also relevant for the T&C practice as this is the first time to our knowledge that all the commonly-used PSD interventions are tested simultaneously under one project. In general, projects are measuring one activity only (training, or consulting or grants) which makes the comparison of the activities difficult (different countries, different implementing agencies). Given the range of activities and the sample size, the GEM project offers an unique opportunity to compare various activities that are addressing the main barrier to growth of MSMEs, namely lack of skills. However to succeed, an intense supervision from the World Bank team is needed to ensure a rigorous impact evaluation but also high-quality of the interventions and high take-up/low drop-out.

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Relevance/Learning elements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government</td>
<td>Additionality of the project to claim results</td>
</tr>
<tr>
<td>GEM Project</td>
<td>1) Inform result framework 2) Inform additionality of the project for the ICR 3) Inform a possible restructuring</td>
</tr>
<tr>
<td>T&amp;C Global practice</td>
<td>1) Comparison of 4 capacity enhancement programs, namely training, consulting, insourcing and outsourcing  2) Contribute to the knowledge on high-growth entrepreneurs and MSMEs</td>
</tr>
<tr>
<td>World Bank Group</td>
<td>1) Contribute to the leading role of the WBG in research in the MSME space  2) Contribute to the knowledge on Job creation</td>
</tr>
</tbody>
</table>

10. **Dissemination Plan** (0.5 page)

There is a strong support from the counterparts (PIU and his Honorable Minister from the Federal Ministry of Industry, Trade and Investment) to design and implement a rigorous impact evaluation. The audience is likely to be Nigerians in general with the objective to showcase the GEM project and attract high-growth entrepreneurs to the program. In addition, these results will be used to present to the Private equity industry as a proof of concept that invest in MSMEs can pay-off. The PIU uses various ways of communicating about the project: events, radio, television. In the near future, other ways will be used: the BIG platform itself could be a way to communicate about the impacts of the project and articles in newspapers.

Internally, the results will be used in the World Bank to communicate about the GEM project and will complement case studies and success stories.
In addition to the policy audience in Nigeria, we believe the results of this impact evaluation will be influential for other World Bank operations and for SME policy more generally. We will employ several means to disseminate the results more broadly. This will include releasing the working paper in the Policy Research Working Paper series, the BREAD and CEPR working paper series, and journal submission. In addition, we will write a 2-page Finance & PSD Impact note to summarize the results for an operational audience, and a blogpost for the Development Impact blog to summarize key lessons from a research perspective. We expect to also present the work at multiple academic conferences and university seminars.

11. Impact Evaluation and Related Teams

- Please adapt the three tables below to list:
  - All members of the IE team, including lead researcher, impact evaluation TTL, and research assistant. Examples of typical roles are included in the table below.
  - ‘Key members’ of the WBG project team that is linked to the proposed impact evaluation, who will be working together with the impact evaluation team.
  - Main government counterparts who will be making decisions (approving) impact evaluation design and those who will be working on developing and implementing the impact evaluation.
### Table 3: Impact Evaluation Team

<table>
<thead>
<tr>
<th>Name</th>
<th>Affiliation</th>
<th>Role in IE team</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>David McKenzie</td>
<td>DECRG, World Bank</td>
<td>Principal Investigator</td>
<td><a href="mailto:dmckenzie@worldbank.org">dmckenzie@worldbank.org</a></td>
</tr>
<tr>
<td>Stephen Anderson</td>
<td>Stanford University GSB</td>
<td>Co-Principal Investigator</td>
<td><a href="mailto:sjanderson@stanford.edu">sjanderson@stanford.edu</a></td>
</tr>
<tr>
<td>David McKenzie</td>
<td>World Bank Group</td>
<td>IE TTL – IE Coordinator</td>
<td><a href="mailto:dmckenzie@worldbank.org">dmckenzie@worldbank.org</a></td>
</tr>
<tr>
<td>Johanne Buba</td>
<td>World Bank Group</td>
<td>Co-Investigator and co-TTL of GEM project (BIG platform)</td>
<td><a href="mailto:jbuba@worldbank.org">jbuba@worldbank.org</a></td>
</tr>
<tr>
<td>Chris Ihueze</td>
<td>Nigerian Government (PIU)</td>
<td>Field Coordinator</td>
<td><a href="mailto:ihuezechris@gmail.com">ihuezechris@gmail.com</a></td>
</tr>
<tr>
<td>Toks Fayomi</td>
<td>World Bank Group (Nigeria office)</td>
<td>Local Researcher or Consultant</td>
<td><a href="mailto:tfayomi@gmail.com">tfayomi@gmail.com</a></td>
</tr>
<tr>
<td>Stephen Kagera</td>
<td>Innovations for Poverty Action</td>
<td>Research Manager (for training enumerator teams and programming surveys)</td>
<td><a href="mailto:kagerawaish@gmail.com">kagerawaish@gmail.com</a></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Cost-effectiveness Researcher</td>
<td></td>
</tr>
</tbody>
</table>

### Table 4: Related World Bank Project Team (Project ID: XXX)

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Role</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kofi-Boateng Agyen</td>
<td>Senior Private Sector Specialist</td>
<td>co-TTL</td>
<td><a href="mailto:kagyen@worldbank.org">kagyen@worldbank.org</a></td>
</tr>
<tr>
<td>Adja Mansora Dahourou</td>
<td>Senior Private Sector Specialist</td>
<td>co-TTL</td>
<td><a href="mailto:adahourou@worldbank.org">adahourou@worldbank.org</a></td>
</tr>
</tbody>
</table>

### Table 5: Country Counterparts

<table>
<thead>
<tr>
<th>Name</th>
<th>Title</th>
<th>Agency</th>
<th>Role</th>
<th>Email</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ugo Ikemba</td>
<td>Project Coordinator</td>
<td>Federal Ministry of Industry, Trade and Investment (Consultant)</td>
<td>Decision maker</td>
<td><a href="mailto:ugo@gcplng.com">ugo@gcplng.com</a></td>
</tr>
<tr>
<td>Seun Akindeinde</td>
<td>BIG manager</td>
<td>Federal Ministry of Industry, Trade and Investment</td>
<td>Day-to-day implementation of the BIG</td>
<td><a href="mailto:sakindeinde@gmail.com">sakindeinde@gmail.com</a></td>
</tr>
</tbody>
</table>
12. Budget

- Complete the excel template and paste its summary table here.

**Table 6: Impact Evaluation Budget Summary**

<table>
<thead>
<tr>
<th>Budget Composition</th>
<th>FY18</th>
<th>FY19</th>
<th>FY20</th>
<th>Total Cost (USD)</th>
<th>% of total budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staff</td>
<td>43500</td>
<td>11500</td>
<td>55000</td>
<td></td>
<td>6%</td>
</tr>
<tr>
<td>STC</td>
<td>74550</td>
<td>20150</td>
<td>94700</td>
<td></td>
<td>10%</td>
</tr>
<tr>
<td>Data collection</td>
<td>380000</td>
<td>400000</td>
<td>780000</td>
<td></td>
<td>81%</td>
</tr>
<tr>
<td>Travel</td>
<td>28000</td>
<td>8000</td>
<td>36000</td>
<td></td>
<td>4%</td>
</tr>
<tr>
<td>Conference arrangements</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>TOTAL</td>
<td>526050</td>
<td>439650</td>
<td>965700</td>
<td></td>
<td>100%</td>
</tr>
</tbody>
</table>

**Sources of Funds**

<table>
<thead>
<tr>
<th>Source</th>
<th>FY18</th>
<th>FY19</th>
<th>FY20</th>
<th>Total Cost (USD)</th>
<th>% of total budget</th>
</tr>
</thead>
<tbody>
<tr>
<td>ComPEL</td>
<td>136300</td>
<td>59650</td>
<td></td>
<td>195950</td>
<td>20%</td>
</tr>
<tr>
<td>Project Budget</td>
<td>380000</td>
<td>380000</td>
<td></td>
<td>760000</td>
<td>79%</td>
</tr>
<tr>
<td>Regional Budget</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0%</td>
</tr>
<tr>
<td>Other (specify) - Stanford</td>
<td>4250</td>
<td></td>
<td>4250</td>
<td></td>
<td>0%</td>
</tr>
<tr>
<td>Other (specify) - CIIP</td>
<td>5500</td>
<td></td>
<td>5500</td>
<td></td>
<td>1%</td>
</tr>
<tr>
<td>TOTAL BUDGET</td>
<td>526050</td>
<td>59650</td>
<td></td>
<td>965700</td>
<td>100%</td>
</tr>
</tbody>
</table>

13. Milestones, Deliverables, and Timeline

As noted above, we want to emphasize that this impact evaluation has started for the first half of our desired sample, with the second half being registered during the rest of this calendar year.
<table>
<thead>
<tr>
<th>Concept Note</th>
<th>Note (including budget and timeline) PowerPoint presentation IE design workshop</th>
<th>Jun, 2017</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseline data collection</td>
<td>Ethics protocol and approval Survey firm terms of reference Questionnaire and surveyor’s manual Field procedures Data protocols</td>
<td>Baseline data collected through rolling application process and induction workshops: June 2016-October 2017</td>
</tr>
<tr>
<td>Baseline analysis</td>
<td>Database file and Do files Data analysis note (baseline report) Baseline workshop and dissemination conference and ppt</td>
<td>November 2017</td>
</tr>
<tr>
<td>Intervention monitoring</td>
<td>Rollout plan Monitoring reports verifying treatment and control status Implementation report Implementation workshop and dissemination conference and ppt</td>
<td>Rolling basis from Feb 2017-May 2018</td>
</tr>
<tr>
<td>Midline/final data collection</td>
<td>Survey firm terms of reference Questionnaire and surveyor’s manual Field procedures Data protocols</td>
<td>First follow-up survey in September/October 2017; Second in September/October 2018; Third in September/October 2019</td>
</tr>
<tr>
<td>Midline/final analysis</td>
<td>Data analysis note Policy note, including cost-effectiveness of arms Database file and Do files Midline/final workshop and dissemination conference and ppt</td>
<td>Preliminary analysis in December 2017 Updated in December 2018, Finalized December 2019</td>
</tr>
</tbody>
</table>

### 14. References


15. Annexes