**The Impact of LinkedIn on Disconnected Young Work-Seekers: Evidence from South Africa**

**Pre-Analysis Plan**

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Fieldwork location: South Africa: Johannesburg, Cape Town, Durban, Eastern Cape, and Port Elizabeth

Fieldwork dates: January 2016 – July 2017

Date of Analysis Plan: First draft of analysis plan written 27 May 2016. The main intervention kicked off with a cohort starting 4 May 2016, and the pilot took place in January 2016. The analysis plan is being submitted to the registry in September 2016, in the middle of the main intervention.

1. **Introduction**

This document outlines our analysis plan for a labor market intervention in South Africa. We summarize the experiment, the survey data, and our plan for statistical analysis. The analysis plan will be submitted to the AEA RCT Registry.

1. **Sampling and Randomization**
   1. ***The Sample***

The study we are undertaking is an impact evaluation of the introduction of LinkedIn to training for employment programs conducted by the Harambee Youth Employment Accelerator in South Africa. Our sample will be drawn entirely from the existing pool of Harambee work-seekers. Harambee stipulates that, in order to be eligible for its training programming, individuals must meet the following criteria:

1. Must be between 18 and 29 years of age
2. Must have completed a matric certificate[[1]](#footnote-1)
3. Must have no criminal record
4. Must not be “blacklisted”[[2]](#footnote-2)
5. Must be considered disadvantaged[[3]](#footnote-3)
6. Must not have been employed full time for more than 12 months
7. Must not be currently enrolled in school
8. Must be a citizen of South Africa or have permission to work in South Africa

After registering with Harambee, applicants receive information about the eligibility requirements via an initial phone screening and are invited to attend the first phase of the training based on self-reported eligibility. Harambee formally verifies the eligibility information in the second phase of training.

In the first phase of Harambee’s training program, work-seekers take a learning potential test, which is a 45-minute, 36-question assessment designed to measure general reasoning ability. They also complete a Shadowmatch test, which is a psychometric assessment that includes a series of personality, situational, and logic questions. Harambee uses Shadowmatch scores to determine suitability for certain types of jobs. Based on the results of the learning potential test and the Shadowmatch test, work-seekers are streamed into the second phase of training with either a retail focus or a corporate focus. In the second phase, work-seekers take literacy and numeracy assessments. Work-seekers in the corporate track of the second phase of training who perform well on the literacy and numeracy assessments are invited to participate in the 6-8-week corporate bridge. Our study will be positioned within these corporate bridging programs and thus our subject population will consist of individuals who have met Harambee’s eligibility criteria for the corporate bridge[[4]](#footnote-4).

* 1. ***Randomization***

Our research methodology plans for a random assignment of control/treatment groups at the training cohort level. Harambee conducts roughly 40 corporate bridge trainings a year, each consisting of 50 work-seekers on average. After performing power calculations[[5]](#footnote-5), we concluded that the minimum detectible effect size associated with 30 clusters (i.e. bridging cohorts) would suffice for meaningful analysis, thus our plan is to assign 15 of those training groups as control and 15 as treatment. We will randomly assign bridging cohorts[[6]](#footnote-6) to treatment or control status, stratifying by location of bridging program[[7]](#footnote-7). For a given location, we will generate a random sequence of 1s and 0s, which will determine whether every other cohort is assigned to treatment (1) or control (0). We will be doing a pairwise randomization, such that the second cohort in a given location will be assigned to receive treatment if the first was assigned to control by the random number generator and vice versa. This will effectively create matched pairs by location and time period. For example, if the random number generator delivers the sequence, 1,0,0,1 for Johannesburg, the first 8 cohorts will receive the following assignment: treatment, control, control, treatment, control, treatment, treatment, control. Harambee will be made aware of treatment status only days before each bridge begins; bridge participants will not explicitly be told their treatment status. Bridge participants will not know the treatment status before each bridge begins. For logistical reasons related to setting up the curriculum, one or two Harambee employees may know the treatment status several weeks in advance, but bridging managers will not be informed until about a week in advance. Bridging managers will be assigned to bridging cohorts without regard to treatment status (essentially at random).

1. **Description of Intervention**

Harambee Youth Employment Accelerator recruits, tests, selects, and assigns marginalized young people into short-term training sessions they call “bridges.” To be eligible, the candidates must be young adults (18+), must be secondary school graduates, and must not have had full-time formal-sector work in the last year. We will be working with Harambee in what they call their “corporate bridges” that prepare candidates for work in consulting, finance, customer service, sales, and insurance. Each of these bridges typically lasts 6-8 weeks and includes intensive instruction, workplace modeling, team building, non-cognitive development, work-seeker supports, and job placement. For the purposes of this research, candidates in the treatment and control groups will go through the typical recruitment, selection, and placement process.

Individuals in the treatment bridges will get periodic emails encouraging them to join LinkedIn, fill out their professional profile, and grow their professional networks. In-person coaching and discussion sessions will support these email “nudges.”[[8]](#footnote-8) Individuals in the control bridges will get the normal Harambee corporate bridge programming.

The research team will collect baseline, endline, and then longer-term post-bridge survey data from the participants on their education experience, career outlook, and career outcomes.  The baseline and endline data will be collected via voluntary participation in web-based surveys. The longer-term data will be collected via voluntary participation in either web- or SMS-based surveys, pending the results of an RTI study of which delivery channel elicits higher response rates. Based on further informed consent, LinkedIn will share with RTI several pieces of data on participants’ LinkedIn usage (i.e. profile completeness, network size, and site usage metrics).

1. **Data**

There are four data sources for this research: (i) a baseline and endline survey administered to control and treatment groups at the beginning and end of the 6-8 week training program; (ii) existing Harambee administrative data; (iii) LinkedIn data; and (iv) data from a tracer survey conducted at 6-12 months post-graduation[[9]](#footnote-9).

* 1. *Baseline and Endline Surveys*

The surveys are web-based and voluntary. They will be sent to participants in control and treatment groups by the research team at the beginning and end of the bridge. In addition to basic demographic information (eg. age, sex, and identifying information), the baseline and endline surveys elicit information on the following outcome variables.

|  |  |
| --- | --- |
| **Variable** | **Definition** |
| Name | First name |
| Surname | Last name |
| ID | Harambee Identification Number |
| Email | The email address used for Harambee activities |
| Birth\_day | Birth day |
| Birth\_mo | Birth month |
| Birth\_yr | Birth year |
| Edn\_level | The highest level of education respondent has completed |
| Sex | Gender of respondent |
| Bridge\_loc | Bridging location |
| Bridge\_num | Cohort number |
| Select\_companies | Respondent is asked to select all companies that hire entry level customer service representatives in the finance, banking, and insurance industries. There are some incorrect answer choices that would count against the respondent’s score on this question for industry knowledge |
| Select\_degrees | Respondent is asked to select FOUR degrees or certificates that are common for workers in the finance, banking, and insurance industries to have. |
| Select\_skills | Respondent is asked to select FOUR skills that are important for workers in the finance, banking, and insurance industries to have. |
| Goodfit | Respondent selects one of three statements about where he/she would rather be in two years: a) working in the finance/banking/insurance industry; b) be working in another industry; c) not be working |
| Expect\_goodthings | How much respondent expects good things to happen to him (scale 1-10) |
| Future\_excited | How much respondent is excited about future (scale 1-10) |
| Future\_trust | How much respondent trusts future will turn out well (scale 1-10) |
| selfefficacy | Respondent ranks how much free choice/control he has over life (scale 0-10) |
| reswage | Minimum take-home pay respondent would be willing to accept |
| Expect\_promot | Respondent is asked to select whether they expect to receive a promotion well ahead of schedule, just ahead of schedule, on schedule, just behind, or well behind. |
| aspwage | Monthly wage aspire to earn 5 years from now |
| Trytolearn | Respondent tries to learn more about things that interest him (5-point scale strongly agree to strongly disagree) |
| bridgeuseful | Respondent thinks things learned in Bridge are useful (5-point scale strongly agree to strongly disagree) |
| Media | Respondent selects all the social media platforms for which he/she has an active account, choosing from Facebook, Twitter, LinkedIn, and Mxit |
| Hrs\_Facebook | How many hours respondent spends per week on the platform |
| Hrs\_Twitter | How many hours respondent spends per week on the platform |
| Hrs\_LinkedIn | How many hours respondent spends per week on the platform |
| Hrs\_Mxit | How many hours respondent spends per week on the platform |

* 1. *Harambee Administrative and Performance Data*

Harambee collects routine intake data (i.e. demographic data, non-cognitive diagnostics) at the onset and then routine performance data during the training period. Performance data are captured in the form of a “scorecard”[[10]](#footnote-10) that contains evaluations of candidates across a variety of metrics, including objective measures of attendance and punctuality as well as some more subjective measures, such as enthusiasm[[11]](#footnote-11). Harambee demographic data may include marital status, number of children, and grant eligibility. The demographic data will be used as controls in regression analyses, will be used as interaction variables in heterogeneity analyses, or will be used to test the balance of control and treatment groups. Performance and non-cognitive data will be treated as outcome variables or variables used in the heterogeneity analyses.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Definition** | **Source (Question Number)** |
| **Demographic Variables** | | |
|  | | |
| Sex\_h | Respondent’s gender | Intake Survey (Mobi Site) |
| DOB\_h | Date of Birth (YYYY-MM-DD) | Intake |
| Age\_h | Age at time of application | Intake |
| City\_h | City respondent lives in (drop-down menu, specify if missing) | Intake |
| Province\_h | Province respondent lives in (drop-down menu, specify if missing) | Intake |
| Township\_h | Township respondent lives in (drop-down menu, specify if missing) | Intake |
| Emp\_h | Whether respondent is currently employed (drown-down menu) | Intake |
| Matric\_h | Binary whether respondent has passed grade 12 or a grade 12 equivalent (drop-down menu) | Intake |
| Highqual\_h | Respondent’s highest qualification (drop-down menu) | Intake |
| Field\_h | If respondent has a qualification, what was his/her field of study? (open-ended question) | Intake |
| Studying\_h | Whether respondent is currently studying (drop-down menu)) | Intake |
| Unemployment\_h | Interval range reflecting how long respondent has been looking for work (i.e 0-6 months) | Intake |
| Emp\_Period\_h | Respondent chooses answer reflecting how long he/she has been in full-time employment with ONE employer (drop-down menu) | Intake |
| Full\_Part\_h | Whether respondent is looking for full- or part-time work. (drop-down menu) | Intake |
| Disability\_h | Whether respondent has a disability (drop-down menu) | Intake |
| Disability\_Type\_h | What is respondent’s disability (open-ended) | Intake |
| Transport\_h | Mode of transportation respondent uses (drop-down menu) | Intake |
| Airtime\_h | Interval range reflecting how much airtime respondent spends or buys per month (drop-down menu) | Intake |
| Opportunities\_h | Respondent chooses which opportunities he/she would be interested in: either entrepreneurship/business; learning; or work | Intake |
| **Performance Data** | | |
| Industry\_know\_h | Industry knowledge is evaluated | Scorecard |
| Typing | Rapid typing is evaluated | SC |
| Elearn | E-learning is evaluated | SC |
| Literacy | Literacy assessment | SC |
| BComm | B/Communications is evaluated | SC |
| Coglab | Coglab assessments | SC |
| Simulation | Simulation assessments | SC |
| Sales | Sales category | SC |
| Billing | Billing is evaluated | SC |
| Journal | Journal usage is evaluated | SC |
| Attendance | Attendance is evaluated | SC |
| Punctuality | Punctuality is evaluated | SC |
| **Non-Cognitive Data** | | |
| Curiosity | Curiosity is evaluated | SC |
| Positive | Positive attitude is evaluated | SC |
| Energy | Energy is evaluated | SC |

* 1. *LinkedIn Data*

Through an agreement between LinkedIn and RTI, LinkedIn will provide data on consenting participants in both control and treatment groups. These data will include: (a) profile metrics; (b) network metrics; and (c) site use metrics. These data, which are measured post-treatment, will be used in analysis as outcome variables or interaction variables.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Definition** | **Source (Question Number)** |
| **Profile Metrics** | | |
| Name\_li | First name of respondent | LinkedIn User Data |
| Surname\_li | Surname of respondent | LI |
| Email\_li | Email associated with account | LI |
| Position | Current position | LI |
| Industry | Respondent’s self-reported industry | LI |
| Edn\_level\_li | Respondent’s education | LI |
| Region | Region | LI |
| Unemployed | Dummy: Is respondent unemployed? | LI |
| Photo | Dummy: Does respondent’s profile have a picture? | LI |
| Completeness | Respondent’s profile completeness, as determined by LinkedIn’s algorithm\* | LI |
| **Network Outcome Variables** | | |
| Connect\_no | Number of connections | LI |
| Connect\_power | Average power of connections, as calculated by LinkedIn’s algorithm\*\* | LI |
| Connect\_edn | Percent of connections with bachelor’s degree and higher | LI |
| Connect\_managers | Percent of connections who are managers and above | LI |
| Connect\_region | Percent of connections in the same region | LI |
| **Site Use Outcome Variables** | | |
| Activity | LinkedIn activity level, as calculated by LinkedIn’s algorithm\*\*\* | LI |
| Views\_profile | Number of profiles viewed by member | LI |
| Views\_articles | Number of articles read by member | LI |
| Views\_jobs | Number of jobs viewed by member | LI |
| Applied\_jobs | Number of jobs applied for using LinkedIn | LI |
| Others\_view | Number of people outside of member’s network who viewed member’s profile | LI |

\**Profile Completeness* is calculated whereby each element of a member’s profile (eg. education, work history, photo, certificates, etc.) is assigned a score based on a proprietary formula. Each member can see their completeness level on the top right hand corner of their profile page.

\*\**Power of Connections* is based on 4 criteria: employment status, education level, professional seniority, and number of connections. The score is determined by ((employment level)X(education score +seniority score + number of connections score))/1.5. Each score is on a scale of 0 to 5 and is divided by 1.5 to normalize the total score to a scale of 10. Each connection gets a score based on the formula, then an average is taken across all the connections of a member.

\*\*\**Activity Level* is determined based on how frequently a member was active during the past four weeks. Different levels are daily active, weekly active, monthly active, new and dormant/inactive.

* 1. *Tracer Survey*

Upon completion of the training period, Harambee graduates participating in the study – in both control and treatment groups – will be sent either a web-based or SMS-based[[12]](#footnote-12) survey questionnaire at 6 months and 12 months post-graduation. This survey is designed to gather data on longer-run outcomes such as their post-training job outcomes and career plans.

|  |  |  |
| --- | --- | --- |
| **Variable** | **Definition** | **Source (Question Number)** |
| **Employment Outcomes** | | |
| Employed | Whether subject is currently employed | Tracer Survey\_1 |
| Emp\_partfull | How many hours per week respondent works: choose from (i) less than 20 per week; (ii) 20-39; (iii) 40 or more | Tracer Survey\_2 |
| Emp\_permtemp | Whether subject has permanent or temporary job | Tracer Survey\_3 |
| Emp\_past6mos | Dummy: whether subject has been employed at all in past 6 months | Tracer Survey\_5 |
| Diffjobs\_past6mos | How many different jobs subject held within past 6 months – Choices: 1, 2, 3, 4, 5 or more | Tracer Survey\_7 |
| Promoted | If respondent held more than one position – was he/she ever promoted within the same job? | Tracer Survey\_6 |
| Difftypejob\_past6mos | Choose from: i) one, ii) more than one | Tracer Survey\_8 |
| Satisfaction | How satisfied respondent is with job (scale 1-3) | Tracer Survey\_4 |
| Difficulty\_getjob | Subject identifies how hard it was to find a first job after completing Harambee training. Chooses between: i) easy, ii) difficult, iii) in-between | Tracer Survey\_9 |
| Adtnl\_training | Dichotomous variable indicating whether respondent has done any additional training or certifications since graduating from Harambee | Tracer Survey\_10 |
| **Network Outcomes** | | |
| Search\_helpful | Select who was most helpful in providing information about subject’s job search: i) friend, ii) family, iii) other Harambees, iv) people from previous job, v) no one. | Tracer Survey\_18 |
| **Job Search Outcomes** | | |
| Hrs\_LinkedIn\_tracer | Subject selects how often he/she uses LinkedIn: i) weekly, ii) monthly, iii) never, iv) I don’t know | Tracer Survey\_19 |
| **Outcomes about Self-Efficacy, Locus of Control** | | |
| Expect\_goodthings\_tracer | How much respondent expects good things to happen to him (scale 1-10) | Tracer Survey\_11 |
| Future\_excited\_tracer | How much respondent is excited about future (scale 1-10) | Tracer Survey\_12 |
| Future\_trust\_tracer | How much respondent trusts future will turn out well (scale 1-10) | Tracer Survey\_13 |
| Selfefficacy\_tracer | Respondent ranks how much free choice/control he has over life (scale 0-10) | Tracer Survey\_14 |
| Reswage\_tracer | Minimum take-home pay respondent would be willing to accept | Tracer Survey\_15 |
| Aspwage\_tracer | Monthly wage aspire to earn 5 years from now | Tracer Survey\_16 |
| **Outcome: Social Media Usage** | | |
| Media\_x\_tracer | Dichotomous variable indicating whether subject has an active account on x (randomly selected from facebook, twitter, and mxit) |  |
| Hrs\_Facebook\_tracer | How many hours the subject typically spends on Facebook per week. Choices: (i) I don’t use facebook; (ii) Less than 1 hour; (iii) 1-3 hours; (iv) 4-6 hours; (v) 7-10 hours; (vi) More than 10 hours | Tracer Survey\_17 |

1. **Identification Strategy**
   1. *Testing Balance*

First, we report in a table descriptive statistics for the demographic variables produced from the first section of our baseline survey and provided by Harambee (include N, mean, s.dev, 1st q, median, 3rd q, min, max, p value from below test).

We will test balance by estimating the following regression, where is the baseline variable for individual in bridging cohort , are bridging cohort fixed effects:

and test the hypothesis that , indicating that assignment to treatment is uncorrelated with baseline characteristics. As indicated by the specification, we will cluster standard errors by bridging cohort.

constructed\_age[[13]](#footnote-13), edn\_level, sex, emp\_h, studying\_h, unemployment\_h, disability\_h, airtime\_h, transport\_h, has\_linkedin\_account) which are captured in our baseline survey as well as in the demographic data provided by Harambee from their baseline survey. We will also test joint balance across all these baseline characteristics by estimating a seemingly unrelated regression system and testing if for all equations.

* 1. *Effects of the Intervention*

We will estimate the treatment effect of the LinkedIn intervention on a variety of endline outcomes, , for individual in bridging cohort under the most basic specification:

, where are bridging cohort fixed effects and are bridging manager fixed effects[[14]](#footnote-14). We will use a covariance estimator that allows clustering at the bridge level.

The general hypothesis we are testing is: , which indicates that the LinkedIn intervention had no effect on the outcome of interest. Put differently, is the average treatment effect of receiving the LinkedIn curriculum during the Harambee bridging program relative to not receiving it.

1. **Structure of Analysis**

Broadly, this research seeks to answer whether introducing the LinkedIn curriculum into training for employment programs has an impact and, if so, what drives the impact. Given the nature of the Harambee bridging programming, we are unable to perturb job search outcomes and short-run employment[[15]](#footnote-15), which suggests this study may need to be replicated in other contexts to understand better the generalizability of the findings.

In this section we describe the outcomes that we consider to be primary and secondary to our analysis, the mechanisms through which the intervention may operate, and the key variables for measuring outcomes and mechanisms. For each of the following outcomes, we will run the hypothesis and estimation tests outlined in the previous section.

**Primary Outcomes**

* 1. *Outcome at Endline: Labor Market Information*

Young, unemployed individuals often do not have information about the state of the labor market and how their skills fit into the labor market. We hypothesize that LinkedIn usage may correct the informational market friction in several ways. First, the LinkedIn content may directly provide work-seekers with more information about the labor market. Secondly, by establishing a professional network, LinkedIn allows work-seekers to connect with those in the workforce who can inform them of job opportunities and provide other information. Finally, LinkedIn may act as a centralized database of a representative sample of industries and firms, improving work-seekers’ understanding of what types of jobs are available and which jobs are suitable for their skills. The work-seekers may learn about the job-worker match function in addition to the distribution of jobs. The following are the null hypotheses related to information that we plan to test:

LinkedIn treatment does not increase work-seekers’ labor market and career related knowledge

LinkedIn treatment does not provide work-seekers with information about how their skills fit into the labour market and for which types of jobs they would be qualified.

These null hypotheses will be tested primarily by measuring changes in responses from the baseline and endline surveys. We will also supplement these data with scorecard data provided by Harambee.[[16]](#footnote-16)

Variables of interest:   
 select\_companies, select\_degrees, select\_skills, industry\_know\_h  
 goodfit

* 1. *Outcome at Endline: Self-Efficacy/Locus of Control, and Aspirations*

We also want to test whether the LinkedIn intervention changes expectations and aspirations. The hypothesis is that improved information, increases in perceptions of connectedness, and positive support may lead to a greater sense of self-efficacy and greater aspirations. Work-seekers who sign up for LinkedIn in principle are able to embed themselves into a larger, potentially supportive professional network, leading to an increase in levels of hope about their future professional prospects. Alternatively, being overwhelmed with information may serve to reduce self-efficacy and aspirations. We will test the following null hypothesis:

LinkIn does not increase an individual’s sense of self-efficacy/locus of control

LinkedIn does not increase levels of hopefulness and career aspirations

We will test the null hypothesis by measuring changes in individual responses from the baseline and endline surveys.

Variables of interest:   
expect\_goodthings, future\_excited, future\_trust, selfefficacy, reswage  
expect\_promot, aspwage

* 1. *Outcome at Endline: Educational Investments*

We are additionally interested in testing whether the LinkedIn intervention has any effect on educational investments. They hypothesis is that work-seekers may invest more in their training (education) when they gain more information about the labor market and increase the size of their professional networks. We are going to test the following null hypothesis:

LinkedIn does not lead to a greater investment in education

We will use measures from the baseline and endline surveys to test this hypothesis. Specifically, we will examine changes in questions related to educational engagement. We will additionally use certain score card variables (eg. curiosity, positive attitude, energy) as proxies for engagement in learning.

Variables of interest: trytolearn, bridgeuseful, curiosity, positive, energy

* 1. *Long-Run Career Outcomes: Retention, Promotion, Job Satisfaction*

We expect to see the greatest impact on the set of outcomes related to long-run employment, such as retention, promotion, job satisfaction, and wages. The LinkedIn intervention likely has a positive effect on wages, job satisfaction, and promotion due to LinkedIn facilitating higher match quality. That said, the effect of the LinkedIn intervention on job retention in the first job post-bridge may be negative due to the restrictive nature of the Harambee bridging and interviewing process. Work-seekers who gain exposure to LinkedIn should be better informed about the labor market and how their skills fit into the labor market and thus may be better equipped to select jobs with higher match quality. Workers may leave their first jobs for more suitable jobs, suggesting changes in retention/longevity between the first job and subsequent jobs may be an interesting outcome. The null hypotheses are as follows

LinkedIn treatment does not lead to higher job retention relative to those in the control group in the first job

LinkedIn treatment does not lead to higher job retention relative to those in the control group in subsequent jobs

LinkedIn treatment does not lead to higher rates of promotion relative to those in the control group

LinkedIn treatment does not lead to higher levels of job satisfaction relative to those in the control group

LinkedIn treatment does not lead to higher wages relative to those in the control group

We will data from the 6-month and 12-month tracer surveys to measure differences between control and treatment cohorts in terms of long-run outcomes.

Variables of interest: employed, emp\_partfull, emp\_permtemp, emp\_past6mos, diffjobs\_past6mos, promoted, difftypejob\_past6mos, satisfaction, difficulty\_getjob, adtnl\_training

* 1. *Heterogeneity Analysis*

We will test for heterogeneous treatment effects for various subgroups and LinkedIn usage characteristics. Unless otherwise specified, the heterogeneity analysis will involve running an interacted regression and testing whether the treatment\*subgroup interaction is significant. The regression will be of the following form: , where every variable is defined as before but now represents the variable we will be interacting with treatment. Specifically, we will test for differential effects along the following dimensions:

* **Strength of signal:** Similarly, we can use LinkedIn data to characterize the strength of the signal, based on the strength of the work-seeker’s profile and the level of usage. The work-seekers with stronger signals of ability are likely to have better match quality, influencing some of the long-run career outcomes. To proxy strength of signal, we can use *completeness*, *connect\_power*, and *activity*, which are variables that come from LinkedIn and are constructed in the manner defined above.
* **Baseline levels of non-cognitive attributes:** baseline level of aspirations, expectations, hope, and reservation wage may interact with the treatment in different ways. For example, the treatment may be more effective for someone with low expectations at baseline than for someone with high baseline expectations. These tests will be two-sided, and the variables come from our baseline survey: *expect\_goodthings*, *future\_excited*, *future\_trust*, *selfefficacy*.
* **Other subgroup analyses:** Past research has shown that things like education, gender, and previous work experience may predict the extent to which labor market interventions are effective. We take the following variables from the baseline survey: *Edn\_level*, and *sex.* We can also use measures from the administrative data from Harambee: *highqual\_h, matric\_h, unemployment\_h, emp\_period\_h*.
* **Experience with social media and computer savviness:** Baseline levels of social media usage and computer savviness may reflect ease with which individuals engage with social media broadly. Those who are comfortable with social media platforms at the baseline may be more likely to benefit from the LinkedIn intervention. Information from the score cards on rapid typing and e-learning may help explain why some people take up LinkedIn and others do not. We will use the following variables from the baseline: *media, hrs\_facebook, hrs\_twitter, hrs\_linkedin,* and *hrs\_mxit*.
* **Better Fit:** Individuals who express at baseline that they think there is another industry that is a better fit may use LinkedIn more intensively and therefore may benefit more from the intervention. That is why we ask the question, *goodfit*, in the baseline survey.
* **Job Type:** As work-seekers go into very different types of jobs (eg. from call centers to sales), intuitively the effects of LinkedIn will vary by job/industry type. Thus, we will do some robustness checks by controlling for industry in our regression equations.

**Mechanisms**

1. *Mechanism: Networks*

Past research has documented the link between the size and strength of an individual’s professional network and employment outcomes. The sample of work-seekers at Harambee, given their lack of work experience and the scarcity of professional role models in their communities, are unlikely to have very extensive professional networks. One of the primary functions of LinkedIn is to serve as a tool for professional networking, thereby improving employment outcomes. The null hypothesis for this mechanism is as follows:

LinkedIn treatment does not lead to greater numbers of professional ties relative to the control

The number of professional ties is not related to long-run employment outcomes

This hypothesis will be tested using data from LinkedIn and the tracer survey that is administered 6 and 12 months post-bridge.

Variables of interest: search\_helpful, connect\_no, connect\_power, connect\_edn, connect\_managers, connect\_region, completeness

1. *Mechanism: Information*

We hypothesize that information may affect expectations and aspirations as well as educational investments. Hope and aspirations are a function of knowledge/perceptions about own skills. Perceptions of ability may be higher than actual ability, in which case the intervention would not necessarily raise expectations. On the other hand, knowledge of the labor market successes of individuals similar to you is likely to raise expectations.

The way enhanced knowledge operates on educational investments may be more straightforward: more knowledge of the labor market may give work-seekers a greater incentive to invest in education. Learning about one’s own skills may also allow work-seekers to invest more appropriately in training and educational opportunities from which the marginal benefit is the highest.

We can test whether the LinkedIn intervention changed work-seekers’ labor market knowledge as described in outcome A, above. If we find that LinkedIn improved labor market knowledge, we can test whether this change correlates with differences in long-run employment outcomes.

Labor market information is not related to long-run employment outcomes

Variables of interest: select\_companies, select\_degrees, select\_skills, industry\_know\_h

1. *Signalling*

Another channel through which the intervention may operate is through signaling. In principle, the LinkedIn intervention improves the technology workers have available to signal their ability. Again, the data provided by LinkedIn (in the variable, completeness) can speak to the strength of the signal. We can test whether differences in the strength of the signal are significantly correlated with changes in long-run employment outcomes.

LinkedIn profile completeness is not related to long-run employment outcomes

Variables of interest: completeness

**Secondary Outcomes**

1. *Nature of LinkedIn Usage*

We will use LinkedIn data and data from the tracer survey to test how long-run employment outcomes vary with frequency of use, type of use, size of network, quality of profile, etc.

The nature of LinkedIn usage can also be used to provide descriptive statistics to characterize take-up.

LinkedIn site use outcome variables: activity, views\_profile, views\_articles, views\_jobs, applied\_jobs, others\_view

Variables from the tracer survey: search\_helpful, hrs\_facebook\_tracer,

**Appendix A: The Harambee Candidate’s Journey**



**Appendix B: LinkedIn Curriculum for the Treatment Groups**

|  |  |  |
| --- | --- | --- |
| **WEEK** | **INSTRUCTION TO BM** | **DETAILS** |
| **Week 1** | -          Get candidate email addresses and send to Edward.  -          Bridging Manager to notify candidates of survey to be completed. | Baseline Survey to be sent to candidates by R&H Team. |
| **Week 2** | ·         Bridging Manager to present “Introducing LinkedIn” to candidates.  ·         Elicit discussion with candidates.  ·         Candidates are to spend time to join LinkedIn and start exploring this tool for at least 30 minutes. | Refer to Introducing LinkedIn presentation |
| -          Email invite by Bridging Manager  -          Confirm email addresses before and  once initial invite has gone out | Email # 1 ( To be sent on Wednesday week 2 after introduction)  Email # 1  Hello everyone!  You are about to embark on your journey to securing a job and building your career.  Are you are interested in becoming a true professional and building your professional network?  If you are nodding away, click on the link below to join the best online professional network – LinkedIn.  [https://www.linkedin.com](https://www.linkedin.com/)  It’s easy to sign up.  All you need to get started is:  ·         An email address, a picture of yourself and some thought about your work experience and educational background.  ·         Follow the steps on LinkedIn to help you build your profile.  If you want to know more about LinkedIn before signing up, check out this video from the link below:  <https://www.youtube.com/watch?v=ZVlUwwgOfKw>  Looking forward to inviting you to join our cohort group once you have signed up!  Regards,  Your Bridging Manager |
| BM to conduct Face to Face Check in after Email # 1:  (Friday week 2)  -          After checking who has signed up or not, have a conversation to find out why some people haven’t signed up.  -           Team pop quiz on LinkedIn # 1.  Discussion about why it may be useful for them. (Hand out document print out: What is LinkedIn?) |  |
| BM sends out second email before the end of the week with tips for building a great profile. | Email # 2 (Friday Week 2)  Email # 2  Hello everyone!  Now that you have signed up for LinkedIn but may want to know more about how to use LinkedIn to develop your profile and help you to build your professional network, I strongly encourage you to check out the links below:  The power of a good profile  http://blog.linkedin.com/2015/05/13/how-linkedin-connects-me-to-future-opportunities/  <https://www.linkedin.com/pulse/how-create-killer-linkedin-profile-get-you-noticed-bernard-marr>  As you build your profile and create a great network here are some things to think about…  -          What would you want your first manager/ employer to see about you?  -          What would you want your colleagues to know about you if you connect with them, when starting your first job?  -          What should you include in your profile summary?  -          Once you have your profile, try to connect with other people you know to build your network.  -          Please don’t worry if your profile is not perfect, or very long – you can fill it in over time, but you have to start somewhere!  Now that you have a profile, connect with other Harambees on your bridge and Harambee alumni by joining your Harambee Cohort group and the Harambee alumni Groups on  LinkedIn.  Leave a comment/ inspirational quote to motivate others in the group  TOP TIP:  When describing your Harambee work experience you should paste the following:  Job Title: Work Readiness Programme candidate  Company: Harambee Youth Employment Accelerator  Time Frame:  (The year of your bridging programme)  Description:  The Harambee Youth Employment Accelerator Bridging Programme is an intensive eight-week, unpaid work simulation experience, that accelerates youth into first time job success and career progression by instilling behaviours and foundation skills needed for succeeding in the world of work.  These include work place behaviours such as attendance, punctuality, positive attitude, energy and curiosity in combination with skills development in business communications; call centre theory and simulation, computer skills, sales and customer service experience.  Looking forward to sharing information with you on our group!  Regards,  Your Bridging Manager |
| **Week 3** | BM Face to Face Check in after Email # 2:  (Tuesday Week 3)  -          Discussion about what they think makes a great profile- what parts of your profile can help you now before you start work-  link to interview preparation: What experiences have you had volunteering, working in your community that could add value to your profile in the absence of work experience.  -           What is a professional network and how can you start to build a good network.  -          Find out who has joined the group/ Why/ Why not  -          Hand out LinkedIn print out to each team for further investigation- profile check list and profile quick tips and personal brand |  |
| NUDGE:  Email a series of links that share useful information about LinkedIn and interesting articles/info/ groups you can access on LinkedIn.  Where possible, upload the link to the cohort group on LinkedIn  Encourage sharing of new information with one another both online and through the face-to-face sessions. | Bridging Manager sends out suggestions and links around building a network and sharing information.  Something most relevant and engaging for candidates- thinking about what will drive them to want to read something:  Email # 3 (Tuesday Week 3)  Email # 3  Hello everyone!  Now that you’re on your way to building a great profile, you can really get started on building your network!  Connecting with the right people, groups and companies can help you to build a great professional network.  TOP TIP:  A great place to start is by connecting with everyone you already know- old friends, family connections or old school connections and work colleagues. You never know what opportunities you may find one day through your personal network. BUT, when you plan to connect with people you don’t know or haven’t worked with before, you should first ask yourself: will this person or group add value to my career and can I offer them value in return?  Do some research on LinkedIn to find people you know, companies and groups that you think may be useful or interesting to follow or join considering the type of entry level job opportunities in sales or service that you may interview for at the end of your bridging programme.  If you want to know more about why building your network is important for your career and how to grow your network, I suggest you check out some of these links below!  <https://www.youtube.com/watch?v=JmvumZbpaNI&feature=youtu.be>  <http://www.careerealism.com/linkedin-invitation-tips/>  Regards,  Your Bridging Manager |
| **Week 4** | NUDGE  Email a message suggesting why completing a profile as far as they can while on the bridge is worthwhile and then links for employers and pulse channel to follow | Email # 4:  (Tuesday/ Wednesday week 4)  Bridging Manager sends out an email suggesting that candidates revisit their profile and some useful groups to think about joining and companies to follow.  Email # 4:  Hello Everyone!  Now that you have started connecting with others and you may have seen what other people’s profiles look like, I suggest you visit your own profile and add some stuff to make it more interesting or more professional.  Write down what you have put down as your profile summary to unpack in the next check in session so we can share and help everyone to improve.  I also highly recommend that you check out the following research done on what completing your profile can do for you.  <http://www.linkedinsights.com/why-you-should-complete-your-linkedin-profile/>  Check out the following groups and join them as you continue to build your network:  Contact Centre and call Centre community  Customer Service Champions  If you find anything interesting that you think is worth sharing, post it to our group! (NB. remember this must be professional)  Regards,  Your Bridging Manager |
| **Weeks 4 & 5** | BM Face to Face Check in Email # 4 and 5: (Monday/ Tuesday  Week 5)  Connect the interview prep process to the development of the candidates’ profiles and their insights from networking (joining groups/ following companies) What they think they can share that will add value to their profile and how they can use their LinkedIn profile to help them sell themselves in an interview.  Connect to volunteering, achievements, how one’s profile can add value to one’s CV.  Have candidates share info or articles/ groups/companies they have joined or have found interesting.  Hand out LinkedIn print out of writing, reading and sharing on Linked In  Team pop quiz on LinkedIn # 2  We will be having a team competition pop quiz next week about what’s been covered so far on LinkedIn so come prepared! Team bonus points up for grabs on the scorecard! |  |
| **Week 5** | NUDGE  Email a message suggesting why completing a profile as far as they can while on the bridge is worthwhile and then links for employers and pulse channel to follow | Email # 5 (Friday Week 4)  Bridging manager sends out links for relevant Harambee employers/ companies/ articles to follow and suggestion to follow the LinkedIn Pulse Career Channel  (see links in email- BM may add one or two extra links for relevant companies selecting off the cohort)  Email # 5:  Hello Everyone!  Here are a few links to follow some of our Harambee employers on LinkedIn as you start to think about new employer networks and what employers expect from you. Also check to see if you have any connections at these companies!  <https://www.linkedin.com/company/standard-bank-south-africa?trk=affco>  <https://www.linkedin.com/company/4731?trk=vsrp_companies_hero_name&trkInfo=VSRPsearchId%3A442519841446542856726%2CVSRPtargetId%3A4731%2CVSRPcmpt%3Ahero>  <https://www.linkedin.com/company/614583?trk=vsrp_companies_res_name&trkInfo=VSRPsearchId%3A442519841446544243080%2CVSRPtargetId%3A614583%2CVSRPcmpt%3Aprimary>  <https://www.linkedin.com/company/17634?trk=vsrp_companies_cluster_name&trkInfo=VSRPsearchId%3A442519841447136489971%2CVSRPtargetId%3A17634%2CVSRPcmpt%3Acompanies_cluster>  <https://www.linkedin.com/company/12696?trk=vsrp_companies_res_name&trkInfo=VSRPsearchId%3A442519841447136666271%2CVSRPtargetId%3A12696%2CVSRPcmpt%3Aprimary>  Search for and join these useful groups:  Call Centre Professionals  Johannesburg Business Network  Also, I strongly advise you to connect to this LinkedIn Pulse Channel (click “+ Follow this Channel”) where you’ll find articles that will help you to think about how to succeed in your first job and build your career:  <https://www.linkedin.com/pulse/channel/your_career>  Regards,  Your Bridging Manager |
| **Week 6 and 7** | NUDGE  Suggestion to read articles that give insight into how to be a great performer at work and  Invitation to join the Harambee Alumni Group | Email # 6 (Monday Week 6)  Bridging manager sends out a mail with links relevant to attitude and performance and work. There is also a link that goes out here to join the Harambee Alumni group.  Email # 6:  Hello everyone!  You now have a profile, perhaps you’ve joined a group or two and you are following some great companies. Well done! You are starting to build your network so keep at it! But remember a great profile and a powerful network is only the first step. You also have to perform at work to build and maintain your professional reputation so people trust what they see on your LinkedIn profile.  Check out these articles about how to be a great performer at work:  <https://www.linkedin.com/pulse/eight-tips-being-great-employee-curtis-rogers>  <https://www.linkedin.com/pulse/why-attitude-more-important-than-iq-dr-travis-bradberry>  I also strongly encourage you to join the Harambee Alumni Group – this group will be a powerful professional support network to help you stay focused and progress in your career.  Regards,  Your Bridging Manager |
| **Week 6** | BM Face to Face Check in after email # 6: (Friday Week 6)  Follow up conversation about what they have found regarding performance in the work place – why it is important to match what you do with your online brand.  Discussion: Why being part of the Harambee Alumni Group can help me to build my career.  Team pop quiz on LinkedIn # 3 |  |
| **Week 7** | Final Check in week 7: (Monday Week 7)  Who will use LinkedIn? Why/ Why not?  How can you use it to benefit your career when you get to work?  What have you enjoyed/ found challenging about using this social media platform? |  |
| **Once at work** | NUDGE  Bridging manager sends out a final email with a link about posting and publishing on LinkedIn and then some information about asking for recommendations- the ins and outs of asking for recommendations. | Email # 7 (Week after close out)  Email # 7:  Hello Everyone!  Now that you have completed your bridging programme and some of you may have started work already, you will continue to build a powerful profile as you gain experience and grow your network.  When you have settled in to your new work environment, you might want to consider publishing a post on LinkedIn to share your experience and advice for other people who might be on a similar journey to you. Remember: Anything you post says something about your personal brand, so post wisely!  Check out these links to learn how to publish a post and what’s worth writing about:  <https://students.linkedin.com/student-publishing>   (cut and paste this link into the URL bar)  Look at the monthly topics on the home page to give you an idea of what’s worth writing about at different times of the year!  <http://blog.linkedin.com/2015/04/15/why-i-publish-on-linkedin-the-power-of-storytelling/>  Also, once you have been working for a while, you may want to ask for recommendations from your colleagues to enhance your profile BUT first check out this link with tips on asking for recommendations:  <http://www.likeable.com/blog/2014/10/how-and-when-to-ask-for-a-linkedin-recommendation>  Wishing you the best of luck on your career journey!  Regards,  Your Bridging Manager |

***Generic recommendation comment that can be edited as per bridging manager’s needs:***

I am pleased to say that \_\_\_\_\_\_\_\_\_\_ completed the Harambee Youth Employment bridging programme successfully and has met the necessary criteria to succeed as a first time employee. This candidate has shown the ability to deliver work under pressure; work with and contribute to a team and to manage his/her performance at work.

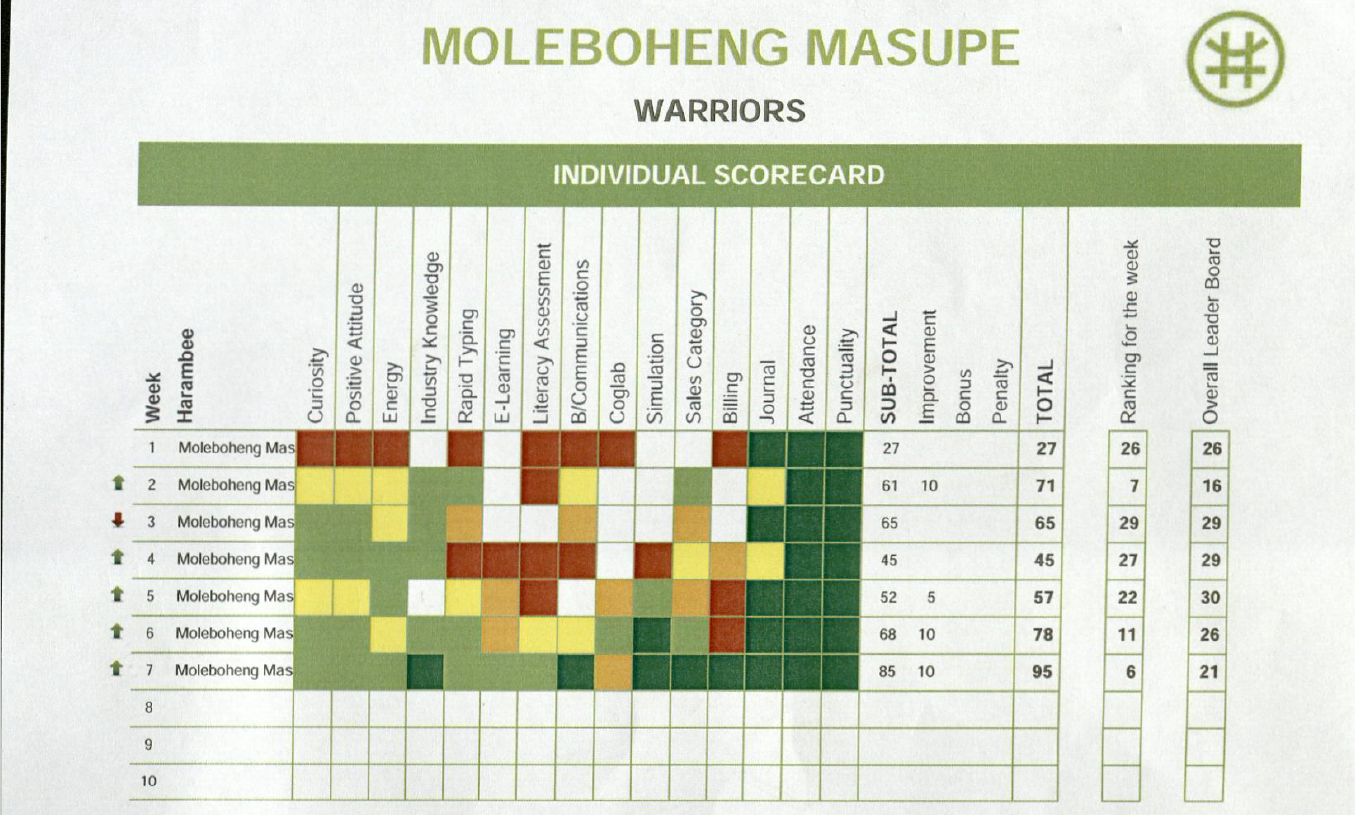
Proposed Summary for Harambee Alumni group

This group is an alumni group for all people that have completed a bridging programme. It is a professional support group to help you stay focused and to progress in your career.

Description for cohort group purpose:

This group is your first professional network. It is for sharing professional tips, interesting articles and information that you find or learn about. The group may also be used, as a forum for feedback on projects, presentations and any work you may want to share that you feel will contribute to other people’s learning.

**Appendix C: Sample Scorecard**



1. The matric certificate in South Africa is analogous to the high school diploma in the United States of America [↑](#footnote-ref-1)
2. Being blacklisted refers to credit and debt status [↑](#footnote-ref-2)
3. Harambee currently measures disadvantage based on the amount of money spent on airtime each month but is considering modifying the measure to be more comprehensive. In practice, this criterion is not binding for most applicants [↑](#footnote-ref-3)
4. Appendix A comprises a graphical depiction of the Harambee candidate’s “journey” through Harambee programming. Our intervention will take place in that penultimate bubble, the 4-8 week specialist bridge. [↑](#footnote-ref-4)
5. A sample size of 30 would allow for a minimum detectable effect size of 0.3 standard deviations based on current, conservative estimates of parameter values. An additional 100 cohorts, for example, would lower the MDE to 0.1 standard deviations, but the time and financial costs of extending the research would outweigh these gains in terms of power. [↑](#footnote-ref-5)
6. The terms, ‘bridge’, ‘bridging cohort’ and ‘cohort’ are used synonymously. [↑](#footnote-ref-6)
7. We will be controlling for bridging manager effects ex-post. [↑](#footnote-ref-7)
8. A copy of the full LinkedIn curriculum appears in Appendix B. [↑](#footnote-ref-8)
9. We may survey the pilot cohort at 9 months and 12 months post bridge to assess whether we pick up more long-run treatment effects at 12 months than at 9 months; if not, we would conduct the second follow up survey among participants of the main study at 9 months in the interest of shortening the timeframe associated with the experiment. [↑](#footnote-ref-9)
10. A copy of the first portion of the scorecard appears in Appendix C. [↑](#footnote-ref-10)
11. Bridging Managers are provided with a 144-page document designed to help standardize the scoring process and remove Bridging Manager-specific biases that would affect candidate scores. [↑](#footnote-ref-11)
12. RTI will be conducting a separate study that examines the differential response rate for SMS- versus web-administered follow-up surveys. The results of this study will be used to inform our decision on whether to make our tracer survey web- or SMS-based. [↑](#footnote-ref-12)
13. Constructed\_age is respondent’s age constructed from their responses to birth\_day, birth\_month, and birth\_year. [↑](#footnote-ref-13)
14. as a vector of baseline covariate valueswill be added if there are baseline imbalances. The vector of baseline covariates would be the same as from the first equation [↑](#footnote-ref-14)
15. Harambee matches most bridging candidates to corporate employers at the end of the bridging program, effectively bypassing the job search mechanism and eliminating variation in short-run employment outcomes. [↑](#footnote-ref-15)
16. Due to concerns about the validity of the scorecard measure of industry knowledge, we will check whether the scorecard measure correlates with our measures from the baseline/endline surveys as a robustness check. In other words, we will use our survey data to validate Harambee’s score card data and use the scorecard data in analysis only once validated. [↑](#footnote-ref-16)