Labour market effects of digital matching platforms: experimental evidence from sub-Saharan Africa

Sam Jones & Kunal Sen
UNU-WIDER

08 November 2022
Agenda

1. Motivation
2. Experimental design
3. Data & Methods
4. Results
5. Validation
6. Conclusion
(1) Motivation
Motivation

Youth employment crisis in sub-Saharan Africa: at least one in five adults looking for work.

But underemployment often coincides with unfilled vacancies.

Growing interest in role of ‘matching frictions’:

- Vacancy information (Dammert et al., 2015)
- Transport subsidies (Franklin, 2018)
- Subsidized skills screening (Abebe et al., 2021)
- Wage information (Jones & Santos, 2022)

Limited rigorous evidence on role of digital jobs platforms, esp. for informal or occasional work $\implies$ we run an experiment
(2) Experimental design
Experimental design

Embedded in a longitudinal survey of TVET graduates (*Ensino Técnico Médio*) as they entered the labour market:

- All regions and types of schools (public/private) – Maputo City, Maputo Province, Tete, Nampula and Cabo Delgado
- Wide range of different courses, agriculture/industry/services
- Baseline face-to-face survey (N = 1639): October-Nov. 2019
- Follow-up telephone survey (4 waves): January-Nov. 2020

More information: final survey report.
Experimental design

Rely on a simple encouragement (nudge) intervention.

Sent SMS messages inviting *randomly-selected* participants to register on one of two local digital labour platforms:

- *Biscate*: for occasional, mainly manual work
- *Emprego*: for more professional work

**SMS invitation example:**

*Mensagem para finalistas do curso Geologia: regista-te no Biscate para receberes oportunidades de trabalho. Liga gratuito para *770#*

Main question: **does usage of digital platforms lead to better employment outcomes?**
(3) Data & Methods
Sample structure

Baseline: N = 1,639

Eligible: N = 1,357

Ineligible: N = 282

Round 1: N = 1,352

Emprego SMS: N = 378

Biscate SMS: N = 406

Control: N = 568

Emprego uptake: N = 148

Biscate uptake: N = 227
Sample structure
Analysis

Schematic:

Uptake regressions:

\[
\text{Usage}_i^p = \alpha_j + \sum_p \beta_p \text{Nudge}_i^p + X_{it}^' \theta^p + \varepsilon_i^p
\]  \hspace{1cm} (1)

Outcome regression (intent-to-treat effect):

\[
y_{it} = \alpha + \sum_p \delta_p \text{Nudge}_i^p + X_{it}^' \gamma + \phi_{it}
\]  \hspace{1cm} (2)

Complier average treatment effect (CATE): \( \delta_p / \beta_p \)
(4) Results
Results: did the nudge work?

<table>
<thead>
<tr>
<th></th>
<th>(1) Emprego usage</th>
<th></th>
<th></th>
<th>(2) Biscate usage</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Ext.</td>
<td>Self</td>
<td>Srch</td>
<td>Mean</td>
<td>Ext.</td>
<td>Self</td>
</tr>
<tr>
<td>Emprego SMS</td>
<td>0.09***</td>
<td>0.10***</td>
<td>0.03**</td>
<td>0.07***</td>
<td>0.01</td>
<td>0.12***</td>
</tr>
<tr>
<td></td>
<td>(0.02)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Biscate SMS</td>
<td>-0.01</td>
<td>0.01</td>
<td>-0.01</td>
<td>-0.00</td>
<td>0.47***</td>
<td>0.27***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.03)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Manual course</td>
<td>-0.00</td>
<td>-0.00</td>
<td>-0.01</td>
<td>-0.01</td>
<td>0.04***</td>
<td>0.01</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.02)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.03***</td>
<td>-0.08***</td>
<td>-0.05***</td>
<td>-0.05***</td>
<td>-0.02*</td>
<td>-0.04***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.02)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Prev. experience</td>
<td>0.00</td>
<td>0.02</td>
<td>0.01</td>
<td>0.01</td>
<td>0.02*</td>
<td>0.04***</td>
</tr>
<tr>
<td></td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
<td>(0.01)</td>
</tr>
<tr>
<td>Obs</td>
<td>5,327</td>
<td>5,327</td>
<td>5,327</td>
<td>5,327</td>
<td>5,327</td>
<td>5,327</td>
</tr>
<tr>
<td>R² adj.</td>
<td>0.06</td>
<td>0.13</td>
<td>0.02</td>
<td>0.11</td>
<td>0.39</td>
<td>0.17</td>
</tr>
</tbody>
</table>

significance: * 10%, ** 5%, *** 1%
Results: pooled (ITT)
Results: gender differences (ITT)
Results: gender differences, manual courses (ITT)

- Working
  - Emprego
  - Biscate
- Paid
  - Emprego
  - Biscate
- Hours
  - Emprego
  - Biscate
- Income
  - Emprego
  - Biscate
- Seeking
  - Emprego
  - Biscate
- Seek time
  - Emprego
  - Biscate
- Satisfied
  - Emprego
  - Biscate
(5) Validation
### Demand on the Biscate platform

<table>
<thead>
<tr>
<th></th>
<th>(I) Contact rate</th>
<th>(II) Agreement rate</th>
<th>(III) Demand index</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(a)</td>
<td>(c)</td>
<td>(a)</td>
</tr>
<tr>
<td>Female</td>
<td>-0.87</td>
<td>-2.86***</td>
<td>-0.41</td>
</tr>
<tr>
<td></td>
<td>(0.86)</td>
<td>(0.75)</td>
<td>(0.38)</td>
</tr>
<tr>
<td>Female × Age</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.98</td>
<td>-0.24</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.20)</td>
<td>(0.53)</td>
<td></td>
</tr>
<tr>
<td>Female × Edu.</td>
<td>-5.02***</td>
<td>-0.92</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(1.72)</td>
<td>(0.78)</td>
<td></td>
</tr>
<tr>
<td>Female × Manual</td>
<td>12.55***</td>
<td>4.95***</td>
<td>15.41***</td>
</tr>
<tr>
<td></td>
<td>(3.04)</td>
<td>(1.19)</td>
<td>(4.66)</td>
</tr>
<tr>
<td>Age</td>
<td>-0.03</td>
<td>-0.23</td>
<td>-0.12</td>
</tr>
<tr>
<td></td>
<td>(0.16)</td>
<td>(0.24)</td>
<td>(0.08)</td>
</tr>
<tr>
<td>Education</td>
<td>-0.78**</td>
<td>0.37</td>
<td>-0.23</td>
</tr>
<tr>
<td></td>
<td>(0.35)</td>
<td>(0.40)</td>
<td>(0.15)</td>
</tr>
<tr>
<td>Experience</td>
<td>-0.70**</td>
<td>0.01</td>
<td>-0.17</td>
</tr>
<tr>
<td></td>
<td>(0.33)</td>
<td>(0.31)</td>
<td>(0.16)</td>
</tr>
<tr>
<td>Constant</td>
<td>7.09***</td>
<td>6.09***</td>
<td>2.74***</td>
</tr>
<tr>
<td></td>
<td>(0.55)</td>
<td>(0.50)</td>
<td>(0.25)</td>
</tr>
<tr>
<td>Obs.</td>
<td>20,850</td>
<td>20,850</td>
<td>20,850</td>
</tr>
<tr>
<td>R²</td>
<td>0.41</td>
<td>0.52</td>
<td>0.35</td>
</tr>
</tbody>
</table>

Significance: * 10%, ** 5%, *** 1%
(6) Conclusion
Highlights

1. Contribute experimental evidence on role of digital platforms to support youth employment in an under-studied context, covering both formal and informal activity.

2. For the average TVET graduate in Mozambique, we found no evidence digital platforms yield significantly better outcomes. BUT weak evidence of higher search and lower satisfaction.

3. Heterogeneous effects seem important: positive effects for women who register on the Biscate platform, esp. those with manual qualifications. Consistent with evidence of higher demand for female-manual workers on the platform.

= Digital platforms may help serve labour market ‘niches’, but unlikely to be a general panacea to jobs challenges.