

Beber, Bernd; Lakemann, Tabea; Schnars, Regina; Lay, Jann

Working Paper

Employment effects of skills trainings in Sub-Saharan Africa: A systematic review of recent randomized controlled trials

Ruhr Economic Papers, No. 1080

Provided in Cooperation with:

RWI – Leibniz-Institut für Wirtschaftsforschung, Essen

Suggested Citation: Beber, Bernd; Lakemann, Tabea; Schnars, Regina; Lay, Jann (2024) : Employment effects of skills trainings in Sub-Saharan Africa: A systematic review of recent randomized controlled trials, Ruhr Economic Papers, No. 1080, ISBN 978-3-96973-254-0, RWI - Leibniz-Institut für Wirtschaftsforschung, Essen, <https://doi.org/10.4419/96973254>

This Version is available at:

<https://hdl.handle.net/10419/300568>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

Bernd Beber
Tabea Lakemann
Regina Schnars
Jann Lay

**Employment Effects of Skills Trainings in
Sub-Saharan Africa: A Systematic Review of
Recent Randomized Controlled Trials**

Imprint

Ruhr Economic Papers

Published by

RWI – Leibniz-Institut für Wirtschaftsforschung
Hohenzollernstr. 1-3, 45128 Essen, Germany

Ruhr-Universität Bochum (RUB), Department of Economics
Universitätsstr. 150, 44801 Bochum, Germany

Technische Universität Dortmund, Department of Economic and Social Sciences
Vogelpothsweg 87, 44227 Dortmund, Germany

Universität Duisburg-Essen, Department of Economics
Universitätsstr. 12, 45117 Essen, Germany

Editors

Prof. Dr. Thomas K. Bauer

RUB, Department of Economics, Empirical Economics
Phone: +49 (0) 234/3 22 83 41, e-mail: thomas.bauer@rub.de

Prof. Dr. Wolfgang Leininger

Technische Universität Dortmund, Department of Economic and Social Sciences
Economics – Microeconomics
Phone: +49 (0) 231/7 55-3297, e-mail: W.Leininger@tu-dortmund.de

Prof. Dr. Volker Clausen

University of Duisburg-Essen, Department of Economics
International Economics
Phone: +49 (0) 201/1 83-3655, e-mail: vclausen@vwl.uni-due.de

Prof. Dr. Ronald Bachmann, Prof. Dr. Almut Balleer, Prof. Dr. Manuel Frondel,
Prof. Dr. Ansgar Wübker

RWI, Phone: +49 (0) 201/81 49-213, e-mail: presse@rwi-essen.de

Editorial Office

Sabine Weiler

RWI, Phone: +49 (0) 201/81 49-213, e-mail: sabine.weiler@rwi-essen.de

Ruhr Economic Papers #1080

Responsible Editor: Manuel Frondel

All rights reserved. Essen, Germany, 2024

ISSN 1864-4872 (online) – ISBN 978-3-96973-254-0

The working papers published in the series constitute work in progress circulated to stimulate discussion and critical comments. Views expressed represent exclusively the authors' own opinions and do not necessarily reflect those of the editors.

Ruhr Economic Papers #1080

Bernd Beber, Tabea Lakemann, Regina Schnars, and Jann Lay

**Employment Effects of Skills Trainings in
Sub-Saharan Africa: A Systematic Review
of Recent Randomized Controlled Trials**

Bibliografische Informationen der Deutschen Nationalbibliothek

The Deutsche Nationalbibliothek lists this publication in the Deutsche Nationalbibliografie;
detailed bibliographic data are available on the Internet at <http://dnb.dnb.de>

RWI is funded by the Federal Government and the federal state of North Rhine-Westphalia.

<http://dx.doi.org/10.4419/96973254>

ISSN 1864-4872 (online)

ISBN 978-3-96973-254-0

Bernd Beber, Tabea Lakemann, Regina Schnars, and Jann Lay*

Employment Effects of Skills Trainings in Sub-Saharan Africa: A Systematic Review of Recent Randomized Controlled Trials

Abstract

This study provides a comprehensive systematic review of recent randomized controlled trials (RCTs) to evaluate the employment effects of skills training programs in sub-Saharan Africa, a region where such interventions are a key element of development assistance. The review focuses on studies conducted between 2019 and 2024, a period marked by a significant increase in the number of RCTs in this area, aiming to fill the gap left by earlier reviews which did not reflect this surge in research activity. By employing the SPIDER tool for defining search terms and the PRISMA procedure for search and selection, we systematically analyze the impact of these training programs on employment outcomes. The findings reveal a shift towards more optimistic assessments compared to previous analyses, suggesting that recent skills training programs may indeed contribute to improving employment rates and job quality. This review not only sheds light on the potential of such interventions to support Sustainable Development Goal (SDG) 8, which aims for sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all but also highlights the necessity for ongoing research to explore the conditions under which these programs can be most effective, thereby supporting efforts to achieve economic development and reduce unemployment in sub-Saharan Africa.

JEL-Codes: J24, O15, C93, I25

Keywords: Systematic review; skills training; randomized controlled trials; sub-Saharan Africa

May 2024

* Bernd Beber: RWI; Lakemann, Schnars, Lay: German Institute for Global and Area Studies (GIGA) – The authors gratefully acknowledge funding from Germany's Federal Ministry for Economic Cooperation and Development (BMZ). This paper was written as part of the RéUsSITE project, which provides research support to the Ministry's Special Initiative Decent Work for a Just Transition (Invest for Jobs). – All correspondence to: Bernd Beber, RWI, Zinnowitzer Str. 1, 10115 Berlin, Germany, e-mail: bernd.beber@rwi-essen.de

1 Introduction

Skills trainings that target individuals or small businesses are an important element of contemporary development assistance. They are a frequent feature of development cooperation in sub-Saharan Africa. While randomized controlled trials (RCTs) of training interventions in that part of the world used to be relatively rare, this has changed drastically in recent years. This systematic review serves to summarize key insights from these recent RCTs and identify study gaps that remain. We focus on the half-decade since the beginning of 2019, specifically because extensive reviews and meta-analysis that had been conducted then do not reflect a large number of recent studies.

We use a systematic review method to summarize the impact of skills training programs on employment outcomes in sub-Saharan Africa, utilizing the SPIDER tool for defining search terms and the PRISMA procedure for search and selection. The systematic search is conducted across three databases: Web of Science (WoS) and the Bielefeld Academic Search Engine (BASE) as principal sources, and Google Scholar as a supplementary source to ensure comprehensive coverage. The screening process resulted in the selection of 28 reports and peer-reviewed studies, covering research from eleven countries within the region, from an initial pool of 2905 records.

This is to our knowledge the first systematic review specifically of RCTs conducted in this research field in sub-Saharan Africa. The relative dearth of rigorous evaluations implemented in sub-Saharan Africa was one important result of a spate of earlier systematic reviews and meta-analyses. This situation has now changed, as a slew of RCTs have been published or have been initiated in the last five years. These RCTs are not reflected in the most commonly cited reviews of studies on skills trainings in low- and middle-income countries, which is the gap this paper aims to fill. Throughout our discussion, we will refer back extensively to earlier reviews and literature, and highlight differences and new directions.

This paper focuses on employment outcomes that are attributable to skills trainings and related development interventions, and speaks to Sustainable Development Goal (SDG) 8. SDG 8 aims to promote sustained, inclusive, and sustainable economic growth, full and productive employment, and decent work for all. We believe that the studies included in our systematic review and our review itself can help fuel progress towards achieving SDG 8 by contributing to our understanding of how skills development interventions improve employment and job quality. By identifying research gaps and suggesting future directions, we hope to inspire research that can support achieving of SDG 8, specifically in sub-Saharan Africa.

Several new insights emerge from this systematic review. While earlier reviews, such as those by Kluge *et al.* (2017, 2019) and others, found mixed or weak effects of training programs on employment and job quality, the studies included in this review are more optimistic, reporting at least some positive outcomes in most cases. Soft skills training, too, has shown limited efficacy in the past, but several studies included in this review suggest optimism for this type of intervention, or at least a nuanced view of potential benefits contingent on contextual factors. Findings with respect to effect heterogeneity are more consistent with prior reviews, in particular with respect to gender effects. In prior overviews, women have been seen as benefiting slightly more from training interventions on average, and a similar pattern appears to emerge in the sample of RCTs conducted in sub-Saharan Africa that are of interest here.

The review identifies several research gaps, including the need for more studies in understudied low-income states, given the concentration of RCTs in just a handful of countries. Progress on comprehensive job quality measures, more interventions targeting large firms, continued work on understanding causal pathways, as well as the conditions for effect dissipation are issues that remain. While recent RCTs in sub-Saharan Africa are generally more optimistic about the efficacy of training interventions than earlier reviews, many questions remain open for future research.

We proceed as follows. We first briefly lay out the principal theory of change associated with training programs in the literature, in which the creation of human capital serves as the link between interventions and outcomes. We also outline alternative mechanisms that emphasize the signaling and network effects of training programs. We then turn to a description of the methodological approach we take in carrying out a systematic review of RCTs on skills training in sub-Saharan Africa. We present the results of this review, and summarize key insights, while linking back extensively to prior literature and earlier reviews. Finally, we identify a set of research gaps that remain.

2 Theories of change

2.1 Skills acquisition

A number of mechanisms that link training programs to improvements in employment and job quality outcomes have been proposed in the literature.

At the level of individual workers and potential employees, many programs aim to improve technical (“hard”) skills, which can be either general (e.g. literacy, basic quantitative or financial reasoning) or specialized (e.g. trade-specific competencies or knowledge concerning particular production processes). Many programs additionally or alternatively target life (“soft”) skills such as the ability to communicate effectively and work well with others.

At the management (or firm) level, programs similarly strive to improve technical capacity (e.g. accounting techniques, product development, or marketing) as well as process and soft skills (e.g. decision-making and effective team leadership).³ Several studies have lamented that “managerial capital” is often missing in developing countries and that suboptimal business practices can help explain the productivity gap between poor and rich countries (Bloom and Van Reenen 2010, Bloom *et al.* 2010), so this is where management-level training interventions try to make a difference.

Training programs vary widely in terms of target groups, contents, methods, length and intensity. For example, interventions that enroll owner-managers of micro firms tend to provide instruction on standard business practices, thereby aiming to increase labor and/or capital productivity, generate higher incomes for owners, and enable hiring of additional staff. Interventions targeting medium-sized or large firms of greater organizational complexity are more likely to work with consulting services in order to suggest bespoke improvements.⁴

Most trainings have traditionally been classroom-based, but a growing awareness of behavioral decision drivers has given rise to innovation and pluralism in techniques. Training programs now frequently include mentoring, visits by role models (Lafortune *et al.* 2018), peer learning (Dalton *et al.* 2019a), combinations of classroom instruction and individual consulting sessions, and/or a focus on personal initiative (Campos *et al.* 2017). But they all have in common that they claim to increase valuable human capital, which in turn affects employment and job quality indicators.

2.2 Context dependency

Linking training programs to employment outcomes by way of human capital accumulation seems straightforward, but outcomes are influenced by numerous factors beyond the direct individual (or firm-specific) accumulation effect. Most importantly, the value of newly created human capital depends on its context-specific market. In order for interventions to work the program and the participants must

³ See McKenzie and Woodruff (2014) for an overview.

⁴ Notable examples from developing economies are Bruhn *et al.* (2018) for micro, small and medium enterprises in Mexico, and Bloom *et al.* (2013, 2020) for large textile firms in India.

perform well at identifying value-generating training opportunities. Market knowledge is a crucial and sometimes underappreciated driver of program efficacy.

In fact, programs can have negative or no effects on economic outcomes even if they successfully and comprehensively transfer target skills to beneficiaries (e.g. Cho *et al.* 2013). This can be the case if the value of newly acquired skills fails to offset any earnings and career opportunities lost during the duration of the course itself, or if a course induces beneficiaries to switch into a sector that turns out to yield inferior earnings. The latter can easily produce a situation in which a training program can be a success in terms of teaching skills while actually failing to create pecuniary value for the individual participant.⁵

Long-term effects are especially difficult to anticipate and can be counterintuitive, given the complex ways in which trainings interact with their economic contexts. For example, Kugler *et al.* (2015) argue that a vocational training opportunity in Colombia led beneficiaries to try to pursue tertiary education, because the training improved individuals' knowledge about sector-specific returns to a university degree.

2.3 Signaling and networks

Training programs can also affect employment outcomes through channels other than skills acquisition and the creation of human capital. Perhaps the most prominent alternative mechanisms concern how program beneficiaries access job opportunities, whether or not program participation leads to improved job-related skills.

First, training programs can provide references and certifications that employers may value and rely on when screening applicants (Abel *et al.* 2020). Depending on program enrollment and certification criteria, successful program completion can serve as a signal of quality which increases the chances of an applicant getting a job. For instance, prospective employers might infer from a reference or certificate that applicants are relatively smarter and more motivated than other applicants. Therefore, an applicant might not get the job because of skills acquired in training but because of other characteristics associated with a certificate and reference letter. In this narrative, training programs usefully facilitate sorting and the allocation of skills profiles in the local economy, but the actual training provided can be of secondary importance.

Second, training programs can create formal and informal networks that can later help beneficiaries to be successful on the job market. Note that training programs can have this effect and give participants a leg up in their search for employment even if they do not impact human capital.⁶

As we note below, the causal pathways described here remain largely speculative in a sizable share of studies, and the mechanisms that link training programs to job acquisition, retention, and quality are in need of continued empirical examination.

⁵ For example, Novella *et al.* (2018) analyze the Chilean Bono Trabajador Activo (BTA) voucher program, which funded training courses for formally employed individuals. They find that employment probabilities and formal-sector income are lower for those who enrolled in a training opportunity, even years later and in particular for those who were willing to change sectors.

⁶ In the case of training courses that are implemented jointly with private firms, it is not uncommon for these firms to fill open positions or apprenticeships with course graduates. Such transfers may even be an advertised feature of integrated, multipronged programs. Here the program may not create any additional jobs, but still provides training participants with access to employment they would not otherwise have had.

3 Method

In order to conduct a systematic review of recent studies, we follow two standard sets of procedures: The SPIDER tool for the determination of search phrases (Cooke *et al.* 2012, Methley *et al.* 2014), and the PRISMA search and selection procedure for systematic reviews (McGowan *et al.*, 2020; Peters *et al.*, 2020).

The purpose of this paper's systematic search is to review recent randomized controlled trials of skills trainings on employment effects in sub-Saharan Africa, and we derive our search terms accordingly. First, we restrict the sample to the relevant set of countries. Second, the phenomenon of interest is any kind of training, skills development, or vocational education interventions. Third, we limit this search the study designs that are randomized controlled trials or field experiments. Fourth, we are only interested in studies where the outcome to be evaluated are broadly employment-related. Fifth, we are interested in effects or estimates as the currency of the target research. Qualitative researchers typically use this last element of the SPIDER tool to declare their interest in "qualitative" work, but note that the alternative term "quantitative" would not ordinarily appear in randomized controlled trials, but "estimate" or "effect" would.

We restrict our search to the five-year period from January 1, 2019 to January 1, 2024. A set of well-known reviews was published in 2019 or in the immediately preceding years, with the dearth of RCTs in sub-Saharan Africa a key insight of those reviews. Since then, a substantial number of precisely such RCTs have been published, and we are setting out to review this body of work.

Table 1 summarizes the search logic. We deploy our SPIDER search in three engines, and in doing so follow the recommendations by Gusenbauer and Haddaway (2020). First, we use the Web of Science (WoS), which includes in particular the Social Sciences Citation Index (SSCI) in its core collection.⁷ Second, we use the Bielefeld Academic Search Engine (BASE).⁸ These two engines, WoS and BASE, are our principal means to identify citations.

Third, we use Google Scholar, as a supplementary source, given its very broad coverage. Google is not suitable as a principal source for the execution of our SPIDER search for two reasons. First, Google does not allow fully articulated Boolean logic, in particular nesting or multiple OR-groups between different AND operators.⁹ Second, the extent of Google search results appears to vary with server load, and results are not exactly replicable. It is very unlikely that this would have resulted in a missed relevant article in our case, given that searches always returned results well in excess of those actually relevant, but it is a reason why Google Scholar is not suitable as the principal source for a systematic review.¹⁰

⁷ We use the following advanced, exact search phrase: ALL=("Angola" AND ("training" OR "skills development" OR "vocational education") AND ("randomized control*" OR "field experiment") AND ("employment" OR "job" OR "workplace") AND ("effect*" OR "estimate"))

⁸ We use the following search term to always search the entire documents: "Angola" AND ("training" OR "skills development" OR "vocational education") AND ("randomized control*" OR "field experiment") AND ("employment" OR "job" OR "workplace") AND ("effect*" OR "estimate")

⁹ For Google Scholar, we use the following alternative search term, cycling through all applicable country names, to produce a result that is reasonably specific while at the same time including all text segments shown in Table 1: "[country]" "training" "randomized control*" "employment" "effect*" intitle:"[country]"|intitle:"training"|intitle:"skills development"|intitle:"vocational education"|intitle:"randomized control*"|intitle:"field experiment"|intitle:"employment"|intitle:"job"|intitle:"workplace"|intitle:"effect*"|intitle:"estimate"

¹⁰ Note that current Google Scholar searches do not appear to truncate searches at 256 characters, as is widely believed, so this is not an ongoing concern.

Table 1: SPIDER specification

SPIDER tool	Search terms
Sample	Angola OR Benin OR Botswana OR “Burkina Faso” OR Burundi OR Cameroon OR “Cape Verde” OR “Central African Republic” OR Chad OR Comoros OR Congo OR “Côte d'Ivoire” OR “Ivory Coast” OR Djibouti OR Eritrea OR Eswatini OR Swaziland OR Ethiopia OR Gabon OR Gambia OR Ghana OR Guinea OR Kenya OR Lesotho OR Liberia OR Madagascar OR Malawi OR Mali OR Mauritania OR Mauritius OR Mozambique OR Namibia OR Niger OR Nigeria OR Rwanda OR “Sao Tome” OR Senegal OR Seychelles OR “Sierra Leone” OR Somalia OR “South Africa” OR “South Sudan” OR Sudan OR Tanzania OR Togo OR Uganda OR Zambia OR Zimbabwe
Phenomenon of Interest	“training” OR “skills development” OR “vocational education”
Design	“randomized control*” OR “field experiment”
Evaluation	“employment” OR “job” OR “workplace”
Research Type	“effect*” OR “estimate”
SPIDER search: S AND P of I AND D AND E AND R ¹¹	

3.1 Eligibility criteria

We include any English-language peer reviewed article or non-referred policy or policy reports, or discussion paper in any kind of series, published between 2019 and 2024, that analyzes a randomized controlled trial of a skills development or training intervention aimed at changing employment-related outcomes in a sub-Saharan African country.

We exclude articles that focus on different primary outcomes, such as mental health indicators (Evans *et al.* 2022), antisocial behavior (Vicente and Vilela 2022), women’s empowerment (Karimli *et al.* 2021), or social inclusion (Kimou *et al.* 2022), if the paper does not also discuss employment outcomes. We also exclude studies that focus on lab-in-the-field outcomes such as competitiveness (Almås *et al.* 2020), and do not report outcomes related to actual employment.

In general our search terms cast a fairly wide net. Skills trainings need not focus on technical skills, but can involve, e.g., soft skills such as self-efficacy or a “growth mindset” (Morris *et al.* 2023). We do require trainings to involve some kind of skill transfer, so exclude exercises like a “self-training intervention” (Demerouti 2023). We also exclude “teaching” interventions if the treatment consists purely of an instance of information provision, such as a presentation of legal facts (Bertrand and Crépon 2021) and (Aberra and Chemin 2023).

¹¹ While a typical SPIDER search will only require (D OR E), we require both D and E in order to limit searches to randomized controlled trials.

3.2 Screening and selection process

Figure 1 shows the PRISMA search procedure. We first retrieve 2905 records with the SPIDER-based electronic search. These were screened based on their titles and abstracts / executive summaries to remove irrelevant or duplicate records. A total of 44 articles were left and read in more detail, of which 28 studies matched the inclusion criteria and objectives of this review. This includes 17 peer-reviewed articles, and 11 discussion papers or technical reports.

Table 1 shows the number of search records retrieved by sub-Saharan country, for the 15 countries that generated the most records. The studies that we retain come from eleven different countries: Uganda (6 studies), Tanzania (4), Ethiopia (4), Rwanda (4), Togo (2), Nigeria (2), Liberia (2), Ghana (1), South Africa (1), Sierra Leone (1), and Mozambique (1).

Figure 1: PRISMA flowchart of search procedure

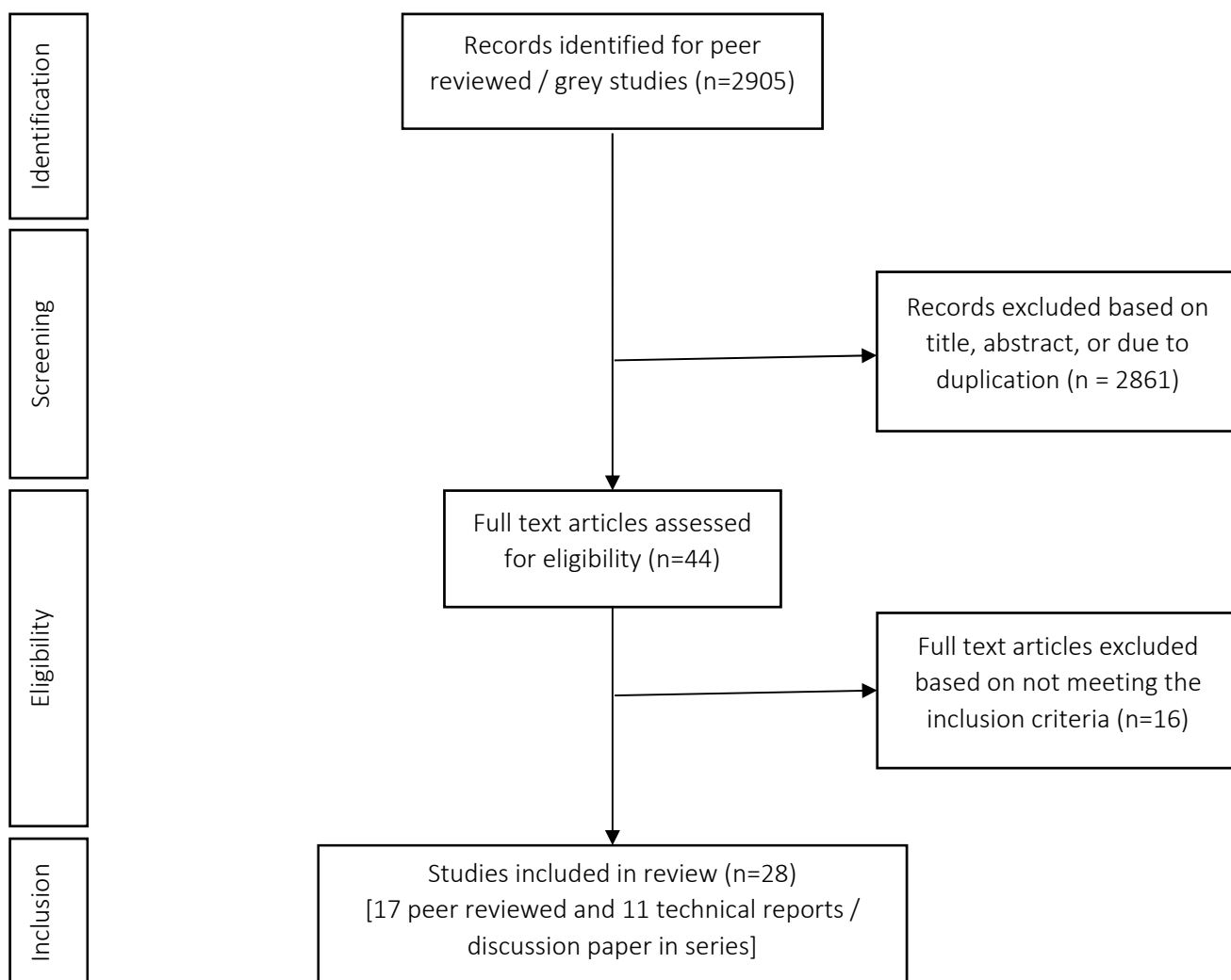


Table 2: Top 15 countries with the most search records

Country	Number of inspected records
Kenya	308
South Africa	289
Uganda	268
Nigeria	245
Ethiopia	215
Ghana	193
Tanzania	180
Malawi	136
Rwanda	102
Zambia	90
Liberia	67
Mozambique	52
Niger	49
Zimbabwe	48
Mali	46

Table 3 summarizes key features of the studies that meet our inclusion criteria and are RCTs of skills training interventions targeting employment outcomes in sub-Saharan Africa. We show key sample characteristics, a brief description of the intervention, and summarize main effects as well as heterogeneous effects that the study may report.

Table 3: Features of included studies

Reference	Country	Sample	Intervention	Main effects	Heterogeneous effects
Agarwal <i>et al.</i> (2023)	Tanzania	151 entrepreneurs in the Tanzanian agribusiness sector, including early career entrepreneurs and others looking to develop new projects	Two different training concepts: an evidence-based approach focusing on quick assessment of business assumptions through customer interactions, and a theory-and-evidence-based approach that encouraged the development of a theory-of-value to guide decision-making and experimentation	Higher revenues and profits in the theory-and-evidence-based condition, no significant difference between the two groups in terms of project termination rates	Effects for startups more significant than for established companies
Alcid <i>et al.</i> (2023)	Rwanda	Total of 400 underemployed youths, in two districts	Training including networking, mentorship, entrepreneurship development, technical skills, and soft social skills	Short-term positive impacts on work readiness and networking without significant effects on employment status or income. No significant medium-term effects reported.	None reported
Alzua <i>et al.</i> (2020)	Uganda	555 Men and women aged 18–35 who own a business, across six Ugandan districts	Credit counseling to raise awareness of financial credit obligations and commitments, and business management soft skills	Reduced demand for credit due to increased risk awareness, and significant increases in bank account ownership and asset investment	None reported
Anderson and McKenzie (2022)	Nigeria	753 firms in one of five targeted sectors and with between 2 and 15 employees, and which registered for the Growth and Employment Project (GEM)	Firms assigned to one of five groups: Support for insourcing, outsourcing, business training, Consulting, or control	Training: No significant impact on business practices or firm growth. Consulting: Improvements in business practices, with some evidence of impact on firm growth. Insourcing and Outsourcing: Significant improvements in business practices, especially in marketing and sales; outsourcing showed significant growth in sales and profits.	None reported
Araar <i>et al.</i> (2019)	Ethiopia	1,445 MSEs recruited from the Addis Ababa development bureau's database, using stratified sampling to ensure representation across various sectors	Credit, training, and a combination of both	Credit, training, and their combination positively affect MSE monthly revenue, with the combination showing the most significant impact	Effects for male-owned MSE, particularly from credit-training combination; no significant effects for women-owned MSEs

Bandiera <i>et al.</i> (2023)	Uganda	1,400 disadvantaged youth applicants, 1,281 firms in eight sectors in 15 urban labor markets	Six months of sector-specific vocational training, or vocational training combined with being matched to a firm, or matching only	Vocational training increases the likelihood of employment, especially in regular jobs and advantageous sectors, raised earnings, and improved sorting into high-quality positions. Matching alone also increased employment and self-employment, but when combined with vocational training, produced worse outcomes than vocational training alone.	Long-run labor outcome index shows no heterogeneity by cognitive ability or self-evaluation
Bandiera <i>et al.</i> (2020)	Uganda	Nearly 5,000 adolescent girls	Vocational training, and information on sex, reproduction, and marriage	The program significantly increased economic empowerment, with increased engagement in income-generating activities, and control over the body, with decreases in teen pregnancy, early marriage, and involuntary sex. Aspirations for gender roles and lifetime opportunities showed short-term but limited long-term changes.	Effects largely homogeneous, when estimating impacts for urban versus rural, rich versus poor, or older versus younger subjects.
Bardasi <i>et al.</i> (2021)	Tanzania	821 initial participants, all female entrepreneurs who responded to a promotional campaign and submitted a detailed application	Basic training involved in-class sessions on managerial and technical skills. Enhanced training added visits from business coaches and additional tailored individual support services.	Basic training had no significant impact on business practices or outcomes. Enhanced training increased adoption of new business practices but did not significantly affect average revenues or profits.	Significant positive impacts on revenues and household assets for more experienced entrepreneurs. In lowest quartile of experience see decrease in revenue after basic program.
Beaman <i>et al.</i> (2021)	Liberia	2,400 vulnerable, out-of-school youth between 15 and 25 with limited formal work experience in Montserrado County	Mercy Corps's Sport for Change (SFC) program, which involved sports groups and a complementary life skills training curriculum	Statistically significant increases in labor outcomes, with a meaningful increase in the aggregate labor force index comprising labor supply and earnings. Limited evidence of meaningful direct impacts on psychosocial outcomes.	Labor force benefits more significant for marginalized populations, including the young, uneducated, females, and those without vocational training.

Bjorvatn <i>et al.</i> (2020)	Tanzania	Over 2,000 students at secondary schools in Dar es Salaam, both men and women, between 15 to 25 years old.	Treatment involved incentivizing students to watch an edutainment show focused on entrepreneurship, business skills, and financial literacy, titled "Ruka Juu" ("Jump Up"), which aired on national television	Suggestive evidence that program increased interest in business and entrepreneurship, but no strong evidence of increased business ownership. Strong negative effect on educational outcomes, leading to lower school performance and continuation rates among participants.	Interest in entrepreneurship rises particularly among females
Blattman <i>et al.</i> (2020)	Uganda	Long-term follow-up to a study with over 12,000 poor, young subjects in small towns and villages	One-time cash grants of \$400 per person for skilled trades setup	After nine years, broad convergence and little sustained effect on work hours or income, but notable lasting impacts on durable assets and skilled trades. No significant long-term effects on health, education, or fertility.	No major heterogeneities
Blalock <i>et al.</i> (2022)	Ethiopia	95 young under- or unemployed individuals in southwestern city of Jimma, recruited to collect animal bones	One-day entrepreneurship training program, with noted challenges concerning trial implementation	Training increased worker participation in the supply chain, had a positive effect on performance, and led to more purchases from non-permitted individuals, which is interpreted as an entrepreneurial response.	None reported
Blimpo and Pugatch (2021)	Rwanda	207 schools teaching a government upper secondary entrepreneurship course	Treatment consisted of intensive teacher training, peer exchanges in each term, and biannual NGO support, compared to the default government training in the control group	Increased active instruction by teachers, but no improvement in academic outcomes or skills. The program led to an increase in students' business participation, but a commensurate decline in wage employment and no overall income effect.	No major differences across genders. Student business involvement less responsive when teacher already qualified, and more responsive for poor students.
Brudevold-Newman and Ubfal (2023)	Rwanda	900 subjects, both male and female recent graduates from tertiary education	Two-week intensive soft skills training program focusing on effective communication, networking, interpersonal and intrapersonal skills	Significant short-term increases in employment, income, and hours for the treatment group, with diminishing effects over time. Persistent increase in job search and networking activities for the treatment group, but no significant impact on transitioning into formal employment.	No significant gender differences in the impacts of the training on employment outcomes or on the development of soft skills
Carnicelli <i>et al.</i> (2022)	Mozambique	974 workers across 3 provinces in 251 unionized firms without prior training exposure	Two-day training on labor law, recruiting new members, union organization, negotiation skills	Training improved knowledge on covered topics, increased hours worked and salaries, maintained unionization levels in treatment group, and reduced work without pay	None reported

Chioda <i>et al.</i> (2021)	Uganda	4,400 high school students at the end of their secondary education, recruited from 200 schools across Uganda	Hard-skills mini-MBA program (ca. 75% hard skills, 25% soft skills), compared to soft skills curriculum (ca. 25% hard skills, 75% soft skills), and a control group	Large increase in earnings for both types of trainings, higher likelihood of enterprise start and survival. Soft skills training linked to improvements in self-efficacy, persuasion, negotiation.	None reported
Crawford <i>et al.</i> (2021)	Nigeria	About 4,000 marginalized youths in the Northern states of Kaduna, Kano, Katsina, and Jigawa	Mafita program, with either apprenticeships with master craft persons or vocational/technical training, including foundational skills in literacy, numeracy, and business-related soft skills, at community skills development centers	Apprenticeship program: Increased self-employment, wage employment, profits from self-employment, attempts to start a business, job search behavior, household asset ownership, and consumption expenditures. No significant impact on literacy, numeracy, or non-material outcomes except for a small increase in female self-esteem and professional social networks. Skills development centers: Similar increases in employment, productivity, entrepreneurship behavior, consumption expenditure, and household asset ownership. No significant impact on literacy and numeracy. Mixed evidence on non-material outcomes, with Increased subjective well-being, especially for female participants, and attitudes towards female empowerment.	Notable gender differences, with female participants, showing large increases in self-employment and income
Dammert and Nansamba (2023)	Liberia	About 570 small entrepreneurs	Standard business training complemented with interpersonal skills training	Combined training did not result in additional gains in profits and sales relative to standard training. No impact on self-reported customer experiences and satisfaction.	None reported
Dimitriadis and Koning (2022)	Togo	About 300 entrepreneurs recruited in Lomé, with businesses having been in operation for at least one year	Two-hour social skills training as part of a two-day marketing program	Social skills training increased collaborative perceptions, information exchange, number of relationships formed, skill complementarity (value-generating partner interactions), and business performance in terms of monthly profits. It decreased ethnic concentration in new relationships formed.	None reported

Hardy <i>et al.</i> (2019)	Ghana	Total sample size of 3,928 youth program applicants aged 15 to 30 years across 32 districts and all regions	Fee-free access to apprenticeships with small informal sector firms (microenterprises) in trades such as garment making, cosmetology, carpentry, welding, and masonry	The program led to modest increases in the probability of starting and completing an apprenticeship, as well as the duration of training. It shifted participants out of wage work into self-employment but did not significantly increase self-employment profits in the short run.	Heterogeneous effects based on gender and trade, e.g., women in cosmetology more responsive to treatment than men in construction. Training with the most experienced or profitable trainers led to higher earnings.
Hirvonen <i>et al.</i> (2023)	Ethiopia	Beneficiaries of the Productive Safety Net Program (PSNP)	Graduation programming that includes financial literacy training and other livelihood activities promoting new income generation activities as well as nutrition interventions and consumption support	Not reported, focuses on effects conditional on drought	Program moderated negative effects of droughts, protecting against nutritional deficits, with enhanced household savings as primary mechanism
Lafortune <i>et al.</i> (2022)	Rwanda	Students at 159 high schools	Six-week gamified online entrepreneurship training	Significant increases in business ownership, participation in school business clubs, employment, earnings, and hours worked	Similar effects for girls and boys, stronger effects for public compared to private schools
Mensmann and Frese (2019)	Togo	912 non-agricultural micro-entrepreneurs in Lomé, with fewer than 50 employees	Personal initiative training, compared to a non-training control group	Personal initiative increased post-training but decreased over time; effect on well-being was not significant	Maintenance of personal initiative over time contingent on "need for cognition"
Morris <i>et al.</i> (2023)	Tanzania	165 initial entrepreneur participants, recruited through a government agency for entrepreneurship training.	Half of the participants received "growth mindset" psychological training in addition to technical-skills training, while the control group received only technical-skills training.	Growth mindset training resulted in significantly higher entrepreneurial self-efficacy and a greater number of entrepreneurial actions compared to the control group. Growth mindset training group engaged in, on average, one additional entrepreneurial action in the month after their training.	None reported

Nkonya <i>et al.</i> (2019)	Uganda	1235 individuals from farmer groups across 9 districts	Either full- or half-dose treatment of Creative Capacity Building (CCB) trainings, which focuses on harnessing indigenous knowledge in the technology design and innovation process	Training increases economic output and improved tool repair capacity, but positive effect on household income not robust and no effect on household assets	None reported
Rosas <i>et al.</i> (2022)	Sierra Leone	More than 3,000 urban youths aged 15–35, with at least some secondary education	Technical/business skills training, in combination with cash injections	The intervention improved employment and entrepreneurship opportunities, and protected household consumption and investments against the backdrop of the Ebola crisis	Youth with higher initial non-cognitive skills saw positive labor market and entrepreneurship impacts. Poorer youth with weaker non-cognitive abilities improved skills but tended to channel benefits more into consumption than investment or savings.
Tarekegne <i>et al.</i> (2023)	Ethiopia	440 smallholder farmers	Three-week training program focusing either on a high- or a low-intensity version of the Comprehensive Competence-Based Training (CCBT)	High-level training led to relatively greater improvement in both competence development and agricultural performance, including higher yield gains.	None reported
Wheeler <i>et al.</i> (2022)	South Africa	1,638 young, disadvantaged individuals seeking work, recruited from existing job readiness programs in large South African cities	Four hours of LinkedIn training during their job readiness program	Training significantly increased the end-of-program employment rate, a persistent effect lasting at least a year	Treatment effects on employment are somewhat smaller for candidates who already had LinkedIn accounts, and somewhat larger for candidates who had low baseline-measured communication skills

4 Results and empirical evidence

The studies summarized here appear notably more optimistic on average than prior meta-analyses have been. Kluve *et al.* (2017, 2019) draw on hundreds of studies, not just RCTs, and are among several reviews that have attempted to synthesize the voluminous literature (Betcherman *et al.* 2004, Cho and Honorati 2014, Blattman and Ralston 2015, Grimm and Paffhausen 2015, J-PAL 2017). Overall, those reviews found that the majority of stand-alone training programs appear to have weak or no average effects on employment and job quality outcomes (Betcherman *et al.* 2004, Card *et al.* 2011, McKenzie and Woodruff 2014, Grimm and Paffhausen 2015, J-PAL 2017). Blattman and Ralston (2015) conclude that perhaps development initiatives should shift from a focus on trainings to a focus on capital-intensive programs, whether in the form of cash transfers or small business loans.

Even then, positive effects tended to be found in a sizable minority of studies. Kluve *et al.* (2017, 2019) find that more than one in three youth employment programs positively affected employment rates or earnings, and Cho and Honorati (2014) identify impacts on business knowledge but not revenue or earnings in a review of programs in developing countries. McKenzie and Woodruff (2014) cautioned that well-powered studies (with large enough samples and a sufficient number of participants) remained relatively rare at that time.

The more recent studies included in our systematic review help address those earlier concerns, and can perhaps be cause for some optimism. We see limited effects in some studies (Blimpo and Pugatch 2021), null effects in others (Anderson and McKenzie 2022, Bardasi *et al.* 2021), and even negative effects (Bjorvatn *et al.* 2020). But overall most studies report at least some positive effects.

4.1 Multipronged programs

Prior literature suggests that comprehensive, multipronged training and support programs outperform stand-alone classes. Multicomponent interventions usually combine a vocational training element with job placement or financing support. For example, Chakravarty (2016) link an intervention that provided skills training and employment placement services to more than 40,000 youths in Nepal to a 15 percentage point increase in non-farm employment a year later. Attanasio *et al.* (2011) report on similarly positive effects of a vocational training program in Colombia that combined three months of classroom instruction with another three months of an in-company apprenticeship. Skills trainings have also been successfully combined with formalization support, including e.g. opening a bank account and registering small informal businesses (Benhassine *et al.* 2018). These successes have led some best-practice guides to recommend that training interventions should in general be multipronged if at all possible (Datta *et al.* 2018).

The patterns are less stark when looking at our set of RCTs in sub-Saharan African countries. Some studies do fit the expectation of multifaceted interventions performing strongly (Bandiera *et al.* 2020, Hirvonen *et al.* 2023). But not all multipronged treatments do (Alcid *et al.* 2023), and some light-touch interventions report substantial effects as well (Blalock *et al.* 2022, Wheeler *et al.* 2022).

4.2 Program quality

We see some evidence from our list of studies that implementation quality and design details of training programs matter (see in particular Hardy *et al.* 2019), consistent with earlier reviews such as Kluve *et al.* (2019). Effects may be enhanced through increased training intensity and duration, responsiveness to beneficiary needs and abilities, sustained monitoring of service providers and beneficiary progress,

dependable and consistent program delivery, and appropriately incentivized contracts with service providers.¹²

Short-duration trainings, for example, frequently fail to affect employee or business performance, while high-duration trainings that can cover more content have been associated with increased long-term employment and earnings (McKenzie and Woodruff 2014, Escudero *et al.* 2019).¹³

It is not always straightforward to anticipate which combination of program features will be optimal in order to improve beneficiaries' economic lives. Programs also have budget constraints, and they have to decide if it is better to deliver high-quality training to a small group or lower-quality training to more people (J-PAL 2017). Blattman und Ralston (2015) suggest an iterative, incremental process of improvement in these circumstances, which prescribes piloting various implementation changes on a small scale before rolling them out to large groups of beneficiaries.

4.3 Private-sector involvement

Less clear are the implications from our review of recent studies for the common claim that private-sector involvement contributes to training program efficacy (J-PAL 2017). Typically there are three related ways in which companies tend to become involved. First, they can assist in curriculum development and help to ensure that training content is contextually suitable and responsive to market demand. A retail sector program in Indonesia, for example, found that a learning module that included information on best practices gathered from local shop owners performed particularly well (Dalton *et al.* 2019b).

Second, private actors can provide mentors and points of contact for beneficiaries seeking information or opportunities beyond the confines of the classroom. This can have desirable effects when local know-how is superior to generic information delivered in a formal class setting. For example, a program for female entrepreneurs in Kenya that evaluated formal business classes against mentorships by local business owners found no changes in profit for in-class participants, but a (short-term) jump in profits among mentees (Brooks *et al.* 2018).

Third, private companies can play an important role in directly absorbing newly trained beneficiaries, whether temporarily through internships and apprenticeships or by way of long-term job offers. Studies in Colombia (Attanasio *et al.* 2011), Argentina (Alzúa *et al.* 2016), and Yemen (McKenzie *et al.* 2016) have found that the provision of internship opportunities by private-sector employers in combination with a training course is associated with higher rates of subsequent employment. Note that trainings in these cases provide an advantage to beneficiaries even if they do not lead to additional jobs being created.

Given this, it is perhaps surprising that private sector involvement does not appear to have been an analytical focus of recent RCTs in this space in sub-Saharan Africa, and future work may want to contribute insights along this dimension.

¹² Program quality also concerns the tools used to effectively signal the value of skills training to employers. Research in this area is limited, and more evaluations of training program certifications are needed (J-PAL 2017).

¹³ The effect of program duration can vary across contexts. For example, Hirshleifer *et al.* (2014) suggest that for vocational training courses in Turkey longer programs have less impact on employment than shorter ones, perhaps because longer courses leave less time for job searches.

4.4 Soft skills training

Employers frequently identify soft skills such as teamwork competency, time management, work ethic, honesty and integrity, and an ability to communicate effectively as an essential requirement for recruitment. However, results on the efficacy of trainings with a soft skill component in a developing context have historically been lackluster (Kluve *et al.* 2017). For example, Groh *et al.* (2016) conducted an RCT of a soft skills program for female college graduates in Jordan. The study found no significant employment effects, even though program quality and length were above the national average and Jordan employers had confirmed their demand for soft skills in graduates.

One avenue for raising the impact of a soft skills intervention may be to combine it with cognitive skills training. A J-PAL review (2017) contends that this interaction can improve labor market and educational outcomes such as attendance and graduation rates, especially among the most disadvantaged. Blattman and Ralston (2015), by contrast, summarize that the evidence for any effect of soft skills training on employment outcomes is quite limited, even when combined with technical or cognitive skills training.¹⁴

One challenge is that some evaluations of mixed trainings find positive effects on employment outcomes, but are unable to separate out the impacts of each program component. Blattman und Annan (2016), for example, analyze the effects of a program that provided agricultural training and inputs as well as significant psychosocial support to ex-fighters in Liberia. The program was able to increase farm employment and earnings, but the partial contribution of its “life skills” component remains unknown.¹⁵ The same applies with respect to life skill modules included in a youth training program in the Dominican Republic studied by Ibararán *et al.* (2014).¹⁶

In this light, it is encouraging to see several studies included in our systematic review that attempt to separate effects of soft skills elements (Chioda *et al.* 2021, Morris *et al.* 2023). And while some studies see no or little added benefit from soft skills training components (Brudevold-Newman and Ubfal 2023, Dammert and Nansamba 2023), several studies are relatively sanguine about the potential efficacy of soft skills trainings (Alzua *et al.* 2020, Chioda *et al.* 2021, Morris *et al.* 2023).

4.5 Effect heterogeneity

Frequently studies report effect heterogeneities. We broadly highlight three factors: Macro-level economic conditions; poverty and disadvantage at the beneficiary level; and gender.¹⁷

Regional or country-specific economic conditions: Historically reviews have shown that program effects vary with the development level of a country. Despite the generally moderate impacts, Kluve *et al.* (2017) find systematic evidence of larger training effects on employment and earnings outcomes in low- and middle-income countries than in high-income countries. In advanced economies, demand for skilled

¹⁴ More encouragingly, they also find that soft skills training can reduce anti-social, criminal, and violent behaviors.

¹⁵ More precisely, the study could not identify separate effects for different training components in the absence of a factorial experimental design.

¹⁶ The study does identify positive program effects on non-cognitive outcomes such as social skills, but cannot link these results to improved employment outcomes.

¹⁷ These are not the only characteristics associated with effect heterogeneity in the literature. For business trainings, for example, Anderson *et al.* (2016) show with an RCT conducted in South Africa that learning financial skills enhances established firms’ profitability, but marketing skills improve the profits of small, new market entrants. A finance focus helps reduce costs and improves profits through efficiency, while a marketing focus achieves greater profits through growth.

labor is high and cohorts are overall relatively well-educated to start with, so a limited-duration skills intervention targeting disadvantaged workers might not be enough to help them catch up with their peers. This could be one explanation for why the studies included in this systematic review are more optimistic on average than earlier meta-analysis would suggest. Effects may in fact be more likely in sub-Saharan Africa.

Both within and between developing countries, the performance of training programs should vary with labor demand conditions and the extent to which programs' target skills match local market demand. Indeed, Ibarrarán *et al.* (2019) document greater returns to training investments in regions with higher demand for skilled labor in the case of a training program in the Dominican Republic. More generally, Escudero *et al.* (2019) find more pronounced positive effects of training programs on labor market outcomes in times of economic expansion in a meta-analysis of 296 impact evaluations of active labor market programs in Latin America and the Caribbean. An expanding, innovating economy often sees demand for skilled workers rise (Vivarelli 2014).¹⁸ We do not see any obvious pattern of this type emerging from our systematic review, but the number of RCTs is still small and effectively covers just a small and non-random subset of sub-Saharan Africa's many labor markets.

Beneficiary-level disadvantage and poverty: By a similar logic, prior reviews have suggested that program activities targeted at particularly disadvantaged, poor beneficiaries tend to produce the largest effects. Training interventions are often narrow in scope and duration, so they might not move the needle much for better-off individuals, but they can make a difference for those starting out with more limited skill sets. Abebe *et al.* (2017), for example, detect the most substantial effects of an intervention including a job application workshop and transport subsidies in Ethiopia among the most disadvantaged participants. In their meta-analysis of interventions in Latin America and the Caribbean, Escudero *et al.* (2019) find that training programs increase employment rates and earnings in particular when they explicitly target poor individuals. Kluve *et al.* (2017, 2019) also find that disadvantaged, low-income individuals benefit most in their meta-analysis of youth employment interventions. We also see patterns of this kind in our systematic review (Beaman *et al.* 2021) but not nearly as commonly as one might expect. This could be a function of only a surprisingly small share of studies reporting heterogeneous effects of this kind to begin with.

Gender: Heterogeneity by gender is by far the most commonly measured and reported type of heterogeneous effect, in earlier studies and also in the set of RCTs in our systematic review. Earlier reviews indicated that, if anything and on average, women benefit slightly more from skills training than men. Escudero *et al.* (2019) find this divergence in their meta-analytic study of programs in Latin America and the Caribbean. Blattman and Ralston (2015) note that youth technical and vocational trainings seem to positively affect women but not men, although business skill programs appear to have similar effects for both. And Kluve *et al.* (2017) observe that effect sizes with respect to employment and earnings may be larger for young women than young men, but caution that this should not be taken to imply that programs targeting women will generally hold greater promise.

There is in fact tremendous variation in how gender interacts with interventions across studies, and the extent to which beneficiaries of one gender outperform others may be heavily context-dependent. In a number of studies, women appear to be better served by a given intervention. For example, Chakravarty *et al.* (2016) show that women gained employment (both overall and non-farm) to a greater extent than men following a youth skills training and job placement program in Nepal, and Attanasio *et al.* (2011)

¹⁸ Hirshleifer *et al.* (2014) note that the links between contextual economic indicators—in their case regional unemployment rates—and demand for skilled labor can be ambiguous.

find large effects for women only on employment and earnings for a training program in Colombia consisting of classroom skills training and internships for poor youths.¹⁹

In other studies, meaningful effects are observed for male but not female participants. Ibararán *et al.* (2019) find an effect of youth trainings on formal employment for men only in the Dominican Republic. So do Alzúa *et al.* (2016) for a vocational training program including skills training and private sector internships in Argentina as well as Hirshleifer *et al.* (2014) in the context of short-term vocational skills programs in Turkey, with the latter also reporting an effect for men only on hours worked. In Yemen, McKenzie *et al.* (2016) too find an effect of a short skills training and subsequent internship placement program on hours worked for men only. Cho *et al.* (2013) conducted an RCT on a youth vocational training and entrepreneurship program in Malawi, in which participants received an apprenticeship by a master craftsman, and identify significant post-training investments in human capital among male beneficiaries only.

In the studies included in our systematic review, heterogeneous effects across genders are relatively frequently reported, and here also on average women appear to benefit slightly more than men. (Beaman *et al.* 2021, Crawford *et al.* 2021), but not universally so, with men reaping greater gains in some contexts (Araar *et al.* 2019), or both benefitting equally (Brudevold-Newman and Ubfal 2023, Lafortune *et al.* 2022).

How and why gender interacts with programming as it does remains largely speculative at this point. The reason why women benefit more from training interventions in some contexts could be that they have more to gain, as they usually start out with worse outcomes than men. In other contexts, constraints may still be binding. Cho *et al.* (2013), for instance, suggest that female participants suffer disproportionately from credit constraints and external shocks (pregnancy, illness or injury in the household, other family obligations), which make sustained investments in their own human capital difficult. Even if an effect is present for both men and women, different mechanisms could be underpinning each. Take the Kugler *et al.* (2015) study in Colombia, which found that participants in a training course were more likely to be enrolled in tertiary education programs more than a decade later. For women, vocational training appears to have relaxed credit constraints. For men, training improved their field-specific understanding of the returns to tertiary education. While RCTs on skills trainings in sub-Saharan Africa have seen tremendous growth, untangling gender-specific mechanisms more systematically across contexts remains a task for future research.

5 Research gaps

5.1 Understudied low-income countries

Prior reviews have often struggled with the fact that the bulk of this literature studies interventions in developed or upper middle-income countries. Fewer training programs in low-income or lower middle-

¹⁹ Note that Chakravarty *et al.* (2016) observe that effects on employment type, hours worked, and earnings did not differ across gender, and that the employment effect for women could be due to the fact that men started at a much higher level of employment and it was easier for women to make large marginal gains, or could stem from women's course choices as employment effects were primarily observed in traditionally female-dominated training fields. Attanasio *et al.* (2011) report no gender difference in program impact on rates of formal employment, but warn that the effect for men could be attributable to attrition bias.

income countries are rigorously evaluated, in particular in Africa.²⁰ As we have shown in this systematic review, this has begun to change, and a slew of RCTs in sub-Saharan Africa has been published and more are in the pipeline.

However, some countries remain understudied. Uganda, Tanzania, Ethiopia, and Rwanda alone account for a good bit more than half of the studies included in our systematic review. Some large countries are not represented at all. This evidence gap matters, because context matters for program efficacy (Quinn and Woodruff 2019).

5.2 Comprehensive measures of job quality

The development of comprehensive and context-sensitive measures of job quality remains one area of possible further consideration. Default models of what constitutes a good job in a rich-country context often do not apply. Employment, for example, is not a useful binary indicator in a place where many people are underemployed, lack sufficient cash income, must work for subsistence and cannot afford the luxury of unemployment (Blattman and Ralston 2015). Earnings from formal and informal work, hours worked and hours spent seeking work, types and variety of tasks completed, reported job satisfaction, workplace safety, health indicators and work-related injuries, time spent with family or household members, other family and household considerations such as food security and relatives' ability to access medical care or educational opportunities could all feature in a discussion of employment quality. Several of the studies included in the systematic review consider such outcomes, and future studies could perhaps go even further and consistently conceive of job quality in broad, contextually appropriate ways.

5.3 Large-firm interventions

While there is a vast body of literature on the impacts of business and management trainings for micro-enterprises in developing countries, the evidence base becomes progressively thinner for larger firm sizes. This is also evident in the list of studies included in the systematic review. Even studies that—according to their title—focus on small and medium-sized enterprises (SMEs) often have mainly micro-sized firms in their sample. This partly reflects the heavily skewed firm size distribution in developing countries, but the paucity of evidence on medium or even large enterprises also constitutes a genuine research gap. The appropriate type of intervention is closely linked to firm size, with larger, more complex firms requiring individual consulting and tailor-made strategies that take the whole firm or plant into account. As the findings of McKenzie and Woodruff (2015) illustrate, there is considerable scope for improving firm-level outcomes, with business practices having large effects on the productivity and profits in their sample of medium and large firms in developing economies. At the same time, there are hardly any studies of consulting interventions in medium or large enterprises, with Bruhn *et al.* (2018) for Mexico and Bloom *et al.* (2013, 2020) for India being notable exceptions.

This omission is particularly problematic from an employment perspective, as one might expect wage job creation to happen especially in medium and large enterprises. Studies focusing on microenterprises often do not consider employment creation explicitly or find no or very small effects (McKenzie and Woodruff 2014, Grimm and Paffhausen 2015), as the scope of expansion is limited. The expected employment effects of business trainings/consulting in larger firms are not only positive, as the limited existing evidence illustrates. On the one hand, Bruhn *et al.* (2018), find positive, large and significant effects of consulting services on employment creation in their sample of micro, small and medium-sized enterprises. Bloom *et al.* (2013), on the other hand, find that while productivity rose, employment

²⁰ This is an issue not only concerning trainings in non-agricultural technical occupations, but also in the agricultural sector (Maïga *et al.* 2020).

dropped in treatment plants due to the adoption of labor-saving technology. Anderson *et al.* (2016) provide some evidence on the link between training contents and employment effects, finding that a marketing curriculum leads to increases in sales and employment, whereas an accounting curriculum leads to cost savings. Their results underscore the importance of balancing the objectives of firm performance and job creation when designing interventions, which still requires a much improved understanding of the mechanisms driving firm-level effects.

5.4 Causal pathways

Several studies included in the systematic review carefully engage with causal pathways, but broadly speaking this set and also prior literature contains relatively little systematic evidence about the mechanisms that connect training programs with employment and job quality outcomes (Kluve *et al.* 2017). Many studies offer qualitative accounts that helpfully lay out the landscape of possible pathways, but few collect data on intermediate outcomes or try to quantitatively estimate the importance of these pathways. This also means that meta-analytic work on mechanisms is scarce.

Intermediate outcomes are often difficult to measure and mechanisms thus challenging to estimate. Some insights can be gleaned from thinking creatively about testable corollaries of different proposed mechanisms. For example, Alzúa (2016) suggests that the temporal fragility of effects could hint at the underlying mechanism. Training that increases human capital, for example by transferring vocational skills and technical expertise, should put beneficiaries on a long-term trajectory of increased earnings and heightened employability. Conversely, effects might decay more rapidly for trainings—especially those administered in partnership with private companies—that affect employment by providing beneficiaries with informal or formal contacts that help them get a job.²¹

5.5 Dissipation over time

The effects of training interventions diminish over time. Few programs have sustained, long term effects. But the rates at which effects decay is highly uncertain and difficult to anticipate. We still lack a systematic understanding of the extent to which and the processes by way of which different types of effects wane over time (Grimm and Paffhausen 2015).

Several Studies included in the systematic review show that the time horizon is limited for the effects of many training programs , although some also find persistent effects (Wheeler *et al.* 2022, Brudevold-Newman and Ubfal 2023). Persistence or the lack thereof has been a theme in many studies over the years. For example, an evaluation of labor market interventions that targeted young women in poor areas of Nairobi identified income effects that dissipated after a year (Brudevold-Newman *et al.* 2017). A study of a training program in Turkey estimated a three-year window for improvements in rates of formal employment (Hirshleifer *et al.* 2014). A vocational training program in Argentina substantially improved formal employment rates and earnings—carefully measured using administrative data—after 18 months, but no main effects could be detected after 33 months and after four years (Alzúa *et al.* 2016). In an analysis of thirteen different programs that recorded subjects’ employment situation on an annual basis and of which twelve showed a positive effect after a year, Cummings and Bloom (2020) report that six increased earnings beyond the first and only four beyond the second year.

On the other hand, several other studies have identified long-run effects (Attanasio *et al.* 2015, Kugler *et al.* 2015, Ibararán *et al.* 2019). A Colombian voucher program enabling training access appears to have increased formal sector earnings by 35,000 Colombian pesos, or 14 percent, the probability of

²¹ Depending on the context, one could also argue that network effects should outlast content effects. Our point is that researchers should try to develop testable implications of potential mechanisms.

working in the formal sector by four percentage points and for a large firm by three percentage points, all up to ten years later (Attanasio *et al.* 2015), and a randomly assigned training program in the Dominican Republic continued to raise earnings six years after the fact (Ibarrarán *et al.* 2019).

Where a research gap remains is with respect to the question why and how some effects do not dissipate quickly over time, while many others do. What can explain different time horizons for different kinds of program effects?

5.6 Cost effectiveness

Relative few of the studies included in the systematic review discuss cost effectiveness. This reflects a challenge across many impact evaluations, which still address the cost effectiveness of interventions relatively infrequently. In 2007, one review found that only one in ten evaluations discussed cost effectiveness (Betcherman *et al.* 2007), but the issue persisted a decade on in Kluge *et al.* (2017) and continues to be an issue today. More studies are needed that compare the economic value generated by an intervention to the intervention's budgetary cost as well as its associated opportunity costs. In some cases, programs may yield returns in excess of their budget, but fail to outperform alternative interventions (e.g. cash grants to beneficiaries). At this time our understanding of how training programs perform in these comparisons remains limited.

5.7 Spillovers and general-equilibrium effects

Apart from their direct impact on beneficiaries, skills development programs may also affect non-beneficiaries indirectly, through spillover effects. Spillover effects can be positive, when skills learned during training are passed on to coworkers or family members benefit from income gains, or negative, for example when a business training leads entrepreneurs to expand their business and cause losses for their competitors. If a program is large and impactful enough, it may have general equilibrium effects and change outcomes for whole markets, for example when the availability of skilled employees attracts foreign investment. However, we do not see this issue much addressed in the studies included in the systematic review.

Spillovers and general equilibrium effects pose several analytical challenges: spillovers can sometimes be captured in an experimental setting but identifying program impacts becomes more complicated if control group outcomes are also affected by the program. Spillover effects on individuals outside the control group may go undetected. Ways to deal with possible spillover effects need to be considered explicitly in the experimental design. One way of doing so is to cluster treatments and ensure distance between treatment and control groups, another is to incorporate the possibility of measuring individual-level spillovers when planning an RCT. An example from Colombia is given by Kugler *et al.* (2015), who are able to show that vocational training boosts not only female participants' own rates of formal employment, but also those of their relatives. While spillover analysis is far from obscure today, it does not appear to feature in current RCTs of skills trainings to the extent that one might expect.

6 Conclusion

This systematic review has provided three sets of insights concerning skills trainings in sub-Saharan Africa. First, we sketched theories of change that link training interventions and related support programs to key economic outcomes, including employment and job quality, with the dominant theory being the creation of market-relevant human capital. We observed that market relevance of transferred skills is crucial and that we should not expect to observe program efficacy in the absence of local (or otherwise accessible) demand for upskilled labor. We also pointed to a set of alternative mechanisms, in which

trainings leave graduates better off because of signaling effects and because they embed them in rent-generating networks, regardless of any effects on human capital as a productive input.

Second, we presented insights from a systematic review, conducted using SPIDER and PRISMA tools and processes, of skills training RCTs in sub-Saharan Africa. We also extensively linked these insights back to earlier literature and extant reviews and meta-analyses. We observe in particular that results from recent RCTs in sub-Saharan Africa appear on average more optimistic about the potential efficacy of training interventions than prior reviews, which generally did not draw much on trials conducted in sub-Saharan Africa.

Finally, we outlined several avenues for contemporary and future research to build on and extend existing work. We point out that much remains to be learned about training programs, for example with regards to large-firm interventions, causal mechanisms, explanations for variation in effect dissipation over time, programs' cost effectiveness, and general equilibrium effects.

References

- Abebe, G., Caria, S., Fafchamps, M., Falco, P., Franklin, S., and Quinn, S., 2017. *Anonymity or Distance? Job Search and Labour Market Exclusion in a Growing African City*. Bonn: Growth and Labour Markets in Low Income Countries Programme, No. 34.
- Abel, M., Burger, R., and Piraino, P., 2020. The Value of Reference Letters: Experimental Evidence from South Africa. *American Economic Journal: Applied Economics*, 12 (3).
- Aberra, A. and Chemin, M., 2023. Know your rights! A field experiment on legal knowledge, property rights, and investment in Kenya. *The Journal of Law, Economics, and Organization*, ewad020.
- Agarwal, R., Bacco, F., Camuffo, A., Coali, A., Gambardella, A., Msangi, H., Sonka, S.T., Temu, A., Waized, B., and Wormald, A., 2023. Does a Theory-of-Value Add Value? Evidence from a Randomized Control Trial with Tanzanian Entrepreneurs. *Bocconi University Management Research Paper*.
- Alcid, A., 2014. *A Randomized Controlled Trial of Akazi Kanoze Youth in Rural Rwanda*. Washington, DC: USAID.
- Alcid, A., Bulte, E., Lensink, R., Sayinzoga, A., and Treurniet, M., 2023. Short- and Medium-term Impacts of Employability Training: Evidence from a Randomised Field Experiment in Rwanda. *Journal of African Economies*, 32 (3), 296–328.
- Almås, I., Berge, L.I.O., Bjorvatn, K., Somville, V., and Tungodden, B., 2020. Adverse Selection into Competition: Evidence from a Large-scale Field Experiment in Tanzania. *NHH Dept. of Economics Discussion Paper No. 19/2020*.
- Aloud, M.E., Al-Rashood, S., Ganguli, I., and Zafar, B., 2020. Information and Social Norms: Experimental Evidence on the Labor Market Aspirations of Saudi Women. *National Bureau of Economic Research Working Paper Series*, Working Paper 26693.
- Alzúa, M. Laura, Cruces, G., and Lopez, C., 2016. Long-run effects of youth training programs: Experimental evidence from Argentina. *Economic Inquiry*, 54 (4), 1839–1859.
- Alzua, M.L., Baez, M.J., Galiwango, S., Joloba, D., Kachero, B., Lopera, M.A., Ssekandi, J., and Zigiti, Z., 2020. Beyond technical skills training: The impact of credit counseling on the entrepreneurial behavior of Ugandan youth. *Review of Development Economics*, 24 (3), 750–765.
- Anderson, S.J., Chandy, R., and Zia, B., 2016. *Pathways to Profits: Identifying Separate Channels of Small Firm Growth through Business Training*. Washington, DC: World Bank, No. 7774.
- Anderson, S.J. and McKenzie, D., 2022. Improving Business Practices and the Boundary of the Entrepreneur: A Randomized Experiment Comparing Training, Consulting, Insourcing, and Outsourcing. *Journal of Political Economy*, 130 (1), 157–209.
- Araar, A., Awel, Y., Boka, J.B., Girma, H., Shafi, A., Yitbarek, E.A., and Zerihun, M., 2019. Impact of Credit and Training on Enterprise Performance: Evidence from Urban Ethiopia. *PEP Working Paper No. 2019-13*.
- Ashraf, N., Bandiera, O., Lee, S.S., and Davenport, Edward, 2020. Losing prosociality in the quest for talent? Sorting, selection, and productivity in the delivery of public services. *American Economic Review*, 110 (5), 59.
- Attanasio, O., Guarín, A., Medina, C., and Meghir, C., 2015. Long Term Impacts of Vouchers for Vocational Training: Experimental Evidence for Colombia. *NBER Working Paper Series*, Working Paper 21607, 1–38.
- Attanasio, O., Kugler, A., and Meghir, C., 2011. Subsidizing Vocational Training for Disadvantaged Youth in Colombia: Evidence from a Randomized Trial. *American Economic Journal: Applied Economics*, 3 (3), 188–220.

- Bandiera, O., Bassi, V., Burgess, R., Sulaiman, M., Vitali, A., and Rasul, I., 2023. The Search for Good Jobs: Evidence from a Six-year Field Experiment in Uganda. *Journal of Economic Perspectives*, 37 (1), 141–167.
- Bandiera, O., Buehren, N., Burgess, R., Goldstein, M., Gulesci, S., Rasul, I., and Sulaiman, M., 2020. Women’s Empowerment in Action: Evidence from a Randomized Control Trial in Africa. *American Economic Journal: Applied Economics*, 12 (1), 210–259.
- Banerjee, A.V. and Duflo, E., 2007. The Economic Lives of the Poor. *Journal of Economic Perspectives*, 21 (1), 141–167.
- Bardasi, E., Gassier, M., Goldstein, M., and Holla, A., 2021. The Profits of Wisdom: The Impact of a Business Support Program in Tanzania. *The World Bank Economic Review*, 35 (2), 328–347.
- Beaman, L., Herskowitz, S., Keleher, N., and Magruder, J., 2021. Stay in the Game: A Randomized Controlled Trial of a Sports and Life Skills Program for Vulnerable Youth in Liberia. *Economic Development and Cultural Change*, 70 (1), 129–158.
- Benhassine, N., McKenzie, D., Pouliquen, V., and Santini, M., 2018. Does inducing informal firms to formalize make sense? Experimental evidence from Benin. *Journal of Public Economics*, 157, 1–14.
- Bertrand, M. and Crépon, B., 2021. Teaching Labor Laws: Evidence from a Randomized Control Trial in South Africa. *American Economic Journal: Applied Economics*, 13 (4), 125–149.
- Betcherman, G., Godfrey, M., Puerto, S., Rother, F., and Stavreska, A., 2007. *A review of interventions to support young workers : findings of the youth employment inventory*. The World Bank, No. 41412.
- Betcherman, G., Olivas, K., and Dar, A., 2004. *Impacts of active labor market programs : new evidence from evaluations with particular attention to developing and transition countries*. The World Bank, No. 29142.
- Bjorvatn, K., Cappelen, A.W., Sekei, L.H., Sørensen, E.Ø., and Tungodden, B., 2020. Teaching Through Television: Experimental Evidence on Entrepreneurship Education in Tanzania. *Management Science*, 66 (6), 2308–2325.
- Blalock, G., Nesin, B., and Simons, A.M., 2022. Developing sustainable supply chains: Evidence from entrepreneurship training in Ethiopia. *Africa Journal of Management*, 8 (1), 36–58.
- Blattman, C. and Annan, J., 2016. Can Employment Reduce Lawlessness and Rebellion? A Field Experiment with High-Risk Men in a Fragile State. *American Political Science Review*, 110 (1), 1–17.
- Blattman, C. and Dercon, S., 2018. The Impacts of Industrial and Entrepreneurial Work on Income and Health: Experimental Evidence from Ethiopia. *American Economic Journal: Applied Economics*, 10 (3), 1–38.
- Blattman, C., Fiala, N., and Martinez, S., 2020. The Long-Term Impacts of Grants on Poverty: Nine-Year Evidence from Uganda’s Youth Opportunities Program. *American Economic Review: Insights*, 2 (3), 287–304.
- Blattman, C. and Ralston, L., 2015. Generating Employment in Poor and Fragile States: Evidence from Labor Market and Entrepreneurship Programs. *SSRN Electronic Journal*.
- Blau, F.D., Currie, J.M., Croson, R.T.A., and Ginther, D.K., 2010. Can Mentoring Help Female Assistant Professors? Interim Results from a Randomized Trial. *American Economic Review*, 100 (2), 348–352.
- Blimpo, M.P. and Pugatch, T., 2021. Entrepreneurship education and teacher training in Rwanda. *Journal of Development Economics*, 149, 102583.
- Bloom, N., Eifert, B., Mahajan, A., McKenzie, D., and Roberts, J., 2013. Does Management Matter? Evidence from India*. *The Quarterly Journal of Economics*, 128 (1), 1–51.

- Bloom, N., Mahajan, A., McKenzie, D., and Roberts, J., 2010. Why Do Firms in Developing Countries Have Low Productivity? *American Economic Review*, 100 (2), 619–623.
- Bloom, N., Mahajan, A., McKenzie, D., and Roberts, J., 2020. Do Management Interventions Last? Evidence from India. *American Economic Journal: Applied Economics*, 12 (2), 198–219.
- Bloom, N. and Van Reenen, J., 2010. Why Do Management Practices Differ across Firms and Countries? *Journal of Economic Perspectives*, 24 (1), 203–224.
- Brooks, W., Donovan, K., and Johnson, T.R., 2018. Mentors or Teachers? Microenterprise Training in Kenya. *American Economic Journal: Applied Economics*, 10 (4), 196–221.
- Brudevold-Newman, A. and Ubfal, D.J., 2023. *Returns to Soft Skills Training in Rwanda*. The World Bank.
- Brudevold-Newman, A.P., Honorati, M., Jakiela, P., and Ozier, O., 2017. *A firm of one's own : experimental evidence on credit constraints and occupational choice*. Washington, DC: World Bank, No. 7977.
- Bruhn, M., Karlan, D., and Schoar, A., 2010. What Capital is Missing in Developing Countries? *American Economic Review*, 100 (2), 629–633.
- Bruhn, M., Karlan, D., and Schoar, A., 2018. The Impact of Consulting Services on Small and Medium Enterprises: Evidence from a Randomized Trial in Mexico. *Journal of Political Economy*, 126 (2), 53.
- Campos, F., Frese, M., Goldstein, M., Iacovone, L., Johnson, H.C., McKenzie, D., and Mensmann, M., 2017. Teaching personal initiative beats traditional training in boosting small business in West Africa. *Science*, 357 (6357), 1287–1290.
- Card, D., Ibararán, P., Regalia, F., Rosas-Shady, D., and Soares, Y., 2011. The Labor Market Impacts of Youth Training in the Dominican Republic. *Journal of Labor Economics*, 29 (2), 267–300.
- Card, D., Kluve, J., and Weber, A., 2015. *What Works? A Meta Analysis of Recent Active Labor Market Program Evaluations*. Cambridge, MA: National Bureau of Economic Research, No. 21431.
- Carnicelli, L., Kosonen, T., and Pirttila, J., 2022. The impacts of union-led training on working conditions: Experimental evidence from Mozambique. *Policy Report*.
- Carrell, S. and Sacerdote, B., 2017. Why Do College-Going Interventions Work? *American Economic Journal: Applied Economics*, 9 (3), 124–151.
- Chakravarty, S., Lundberg, M.K.A., Nikolov, P.V., and Zenker, J., 2016. *The role of training programs for youth employment in Nepal : impact evaluation report on the employment fund*. Washington, DC: World Bank, No. 7656.
- Chioda, L., Contreras-Loya, D., Gertler, P., and Carney, D., 2021. *Making Entrepreneurs: Returns to Training Youth in Hard Versus Soft Business Skills*. Cambridge, MA: National Bureau of Economic Research, No. w28845.
- Cho, Y. and Honorati, M., 2014. Entrepreneurship programs in developing countries: A meta regression analysis. *Labour Economics*, 28, 110–130.
- Cho, Y., Kalomba, D., Mobarak, A.M., and Orozco Olvera, V.H., 2013. *Gender Differences in the Effects of Vocational Training: Constraints on Women and Drop-Out Behavior*. Washington, DC: World Bank, No. 6545.
- Choe, C., Flores-Lagunes, A., and Lee, S.-J., 2011. *Do Dropouts Benefit from Training Programs? Korean Evidence Employing Methods for Continuous Treatments*. Bonn: IZA Institute of Labor Economics, No. 6064.
- Cooke, A., Smith, D., and Booth, A., 2012. Beyond PICO: The SPIDER Tool for Qualitative Evidence Synthesis. *Qualitative Health Research*, 22 (10), 1435–1443.

- Crawford, E., Crost, B., Dube, O., Ferrah, S., Holmlund, M., Khan, N., Mvukiyehe, E., and Umar, N.S., 2021. A way out? Evidence from two Trials of the Mafita Apprenticeship and Community-Based Skills Training Programs in Northern Nigeria. *World Bank, DIME Department, Endline Evaluation Report*.
- Cummings, D. and Bloom, D., 2020. *Can Subsidized Employment Programs Help Disadvantaged Job Seekers? A Synthesis of Findings from Evaluations of 13 Programs*. Washington, DC: Office of Planning, Research, and Evaluation, Administration for Children and Families, U.S. Department of Health and Human Services, No. 2020–23.
- Dalton, P.S., Rüschenpöhler, J., Uras, B., and Zia, B., 2019a. *Learning to Grow from Peers: Experimental Evidence from Small Retailers in Indonesia*. Washington, DC: World Bank, No. 8933.
- Dalton, P.S., Rüschenpöhler, J., Uras, B.R., and Zia, B., 2019b. Local Best Practices for Business Growth. *SSRN Electronic Journal*.
- Dammert, A.C. and Nansamba, A., 2023. Skills training and business outcomes: Experimental evidence from Liberia. *World Development*, 162, 106120.
- Datta, N., Assy, A.E., Buba, J., and Watson, S.M., 2018. *Integration : A New Approach to Youth Employment Programs - General Guidelines for Project Teams*. Washington, DC: World Bank, No. 3.
- Del Carpio, L. and Guadalupe, M., 2018. More Women in Tech? Evidence from a Field Experiment Addressing Social Identity. *CEPR Discussion Paper No. DP13234*.
- Demerouti, E., 2023. Effective employee strategies for remote working: An online self-training intervention. *Journal of Vocational Behavior*, 142, 103857.
- Dimitriadis, S. and Koning, R., 2022. Social Skills Improve Business Performance: Evidence from a Randomized Control Trial with Entrepreneurs in Togo. *Management Science*, 68 (12), 8635–8657.
- Drexler, A., Fischer, G., and Schoar, A., 2014. Keeping It Simple: Financial Literacy and Rules of Thumb. *American Economic Journal: Applied Economics*, 6 (2), 1–31.
- Escudero, V., Kluve, J., López Mourelo, E., and Pignatti, C., 2019. Active Labour Market Programmes in Latin America and the Caribbean: Evidence from a Meta-Analysis. *The Journal of Development Studies*, 55 (12), 2644–2661.
- Evans, L., Lund, C., Massazza, A., Weir, H., and Fuhr, D.C., 2022. The impact of employment programs on common mental disorders: A systematic review. *International Journal of Social Psychiatry*, 68 (7), 1315–1323.
- Gee, L.K., 2018. The More You Know: Information Effects on Job Application Rates in a Large Field Experiment. *Management Science*, 65 (5), 2077–2094.
- GIZ, 2016. Full and Productive Employment and Decent Work for All: Handbook on Employment Promotion in Development Cooperation.
- Glennerster, R. and Takavarasha, K., 2013. *Running randomized evaluations: a practical guide*. Princeton: Princeton University Press.
- Grimm, M. and Paffhausen, A.L., 2015. Do interventions targeted at micro-entrepreneurs and small and medium-sized firms create jobs? A systematic review of the evidence for low and middle income countries. *Labour Economics*, 32, 67–85.
- Groh, M., Krishnan, N., McKenzie, D., and Vishwanath, T., 2016. The impact of soft skills training on female youth employment: evidence from a randomized experiment in Jordan. *IZA Journal of Labor & Development*, 5 (1), 9.

- Gusenbauer, M. and Haddaway, N.R., 2020. Which academic search systems are suitable for systematic reviews or meta-analyses? Evaluating retrieval qualities of Google Scholar, PubMed, and 26 other resources. *Research Synthesis Methods*, 11 (2), 181–217.
- Hardy, M., Mbiti, I., McCasland, J., and Salcher, I., 2019. The Apprenticeship-to-Work Transition: Experimental Evidence from Ghana. *World Bank Policy Research Working Paper No. 8851*.
- Hirshleifer, S., McKenzie, D., Almeida, R., and Ridao-Cano, C., 2014. The Impact of Vocational Training for the Unemployed: Experimental Evidence from Turkey. *The Economic Journal*, 126 (597), 2115–2146.
- Hirvonen, K., Gilligan, D.O., Leight, J., Tabet, H., and Villa, V., 2023. *Do ultra-poor graduation programs build resilience against droughts? Evidence from rural Ethiopia*. 0 ed. Washington, DC: International Food Policy Research Institute.
- Ibanez, M. and Riener, G., 2018. Sorting through Affirmative Action: Three Field Experiments in Colombia. *Journal of Labor Economics*, 36 (2), 437–478.
- Ibarrarán, P., Kluge, J., Ripani, L., and Rosas Shady, D., 2019. Experimental Evidence on the Long-Term Effects of a Youth Training Program. *ILR Review*, 72 (1), 185–222.
- Ibarraran, P., Ripani, L., Taboada, B., Villa, J.M., and Garcia, B., 2014. Life skills, employability and training for disadvantaged youth: Evidence from a randomized evaluation design. *IZA Journal of Labor & Development*, 3 (1), 10.
- J-PAL, 2017. *Skills Training Programs*. Cambridge, MA: Abdul Latif Jameel Poverty Action Lab.
- Karimli, L., Lecoutere, E., Wells, C.R., and Ismayilova, L., 2021. More assets, more decision-making power? Mediation model in a cluster-randomized controlled trial evaluating the effect of the graduation program on women’s empowerment in Burkina Faso. *World Development*, 137, 105159.
- Kimou, A.J.C., Ahoure, A., Djebbari, H., and Becho, I., 2022. Soft Skills Training and Social Inclusion of Vulnerable Youth in Post-conflict Côte d’Ivoire: Evidence from a Randomized Control Trial.
- Kluge, J., 2011. Measuring employment effects of technical cooperation interventions: Some methodological guidelines.
- Kluge, J., Puerto, S., Robalino, D., Romero, J.M., Rother, F., Stöterau, J., Weidenkaff, F., and Witte, M., 2017. Interventions to improve the labour market outcomes of youth: A systematic review of training, entrepreneurship promotion, employment services and subsidized employment interventions. *Campbell Systematic Reviews*, 13 (1).
- Kluge, J., Puerto, S., Robalino, D., Romero, J.M., Rother, F., Stöterau, J., Weidenkaff, F., and Witte, M., 2019. Do youth employment programs improve labor market outcomes? A quantitative review. *World Development*, 114, 237–253.
- Kugler, A., Kugler, M., Saavedra, J., and Prada, L.O.H., 2015. *Long-Term Educational Consequences of Vocational Training in Colombia: Impacts on Young Trainees and Their Relatives*. Cambridge, MA: National Bureau of Economic Research, No. 21607.
- Lafortune, J., Pugatch, T., and Ubfal, J.T.D., 2022. Can Interactive Online Training Make High School Students More Entrepreneurial? Experimental Evidence from Rwanda. *IZA DP No. 15064*.
- Lafortune, J., Riutort, J., and Tessada, J., 2018. Role Models or Individual Consulting: The Impact of Personalizing Micro-entrepreneurship Training. *American Economic Journal: Applied Economics*, 10 (4), 222–245.
- Maïga, W.H.E., Porgo, M., Zahonogo, P., Amegnaglo, C.J., Coulibaly, D.A., Flynn, J., Seogo, W., Traoré, S., Kelly, J.A., and Chimwaza, G., 2020. A systematic review of employment outcomes from youth

- skills training programmes in agriculture in low- and middle-income countries. *Nature Food*, 1 (10), 605–619.
- Maitra, P. and Mani, S., 2017. Learning and earning: Evidence from a randomized evaluation in India. *Labour Economics*, 45, 116–130.
- McKenzie, D., Assaf, N., and Cusolito, A.P., 2016. The demand for, and impact of, youth internships: evidence from a randomized experiment in Yemen. *IZA Journal of Labor & Development*, 5 (1).
- McKenzie, D. and Puerto, S., 2017. *Growing Markets through Business Trainings for Female Entrepreneurs*. Washington, DC: World Bank, No. 7993.
- McKenzie, D. and Woodruff, C., 2014. What Are We Learning from Business Training and Entrepreneurship Evaluations around the Developing World? *The World Bank Research Observer*, 29 (1), 48–82.
- McKenzie, D. and Woodruff, C., 2015. *Business practices in small firms in developing countries*. Cambridge, MA: National Bureau of Economic Research, No. 21505.
- Mensmann, M. and Frese, M., 2019. Who stays proactive after entrepreneurship training? Need for cognition, personal initiative maintenance, and well-being. *Journal of Organizational Behavior*, 40 (1), 20–37.
- Methley, A.M., Campbell, S., Chew-Graham, C., McNally, R., and Cheraghi-Sohi, S., 2014. PICO, PICOS and SPIDER: a comparison study of specificity and sensitivity in three search tools for qualitative systematic reviews. *BMC Health Services Research*, 14 (1), 579.
- Morris, S., Carlos, C., Kistruck, G.M., Lount, R.B., and Thomas, T.E., 2023. The impact of growth mindset training on entrepreneurial action among necessity entrepreneurs: Evidence from a randomized control trial. *Strategic Entrepreneurship Journal*, 17 (3), 671–692.
- Nkonya, E., Bashaasha, B., Kato, E., Bagamba, F., and Danet, M., 2019. *Impact of creative capacity building of local innovators and communities on income, welfare and attitudes in Uganda: a cluster randomized control trial approach*. 3ie Grantee Final Report.
- Novella, R., Rucci, G., Vazquez, C., and Kaplan, D.S., 2018. Training Vouchers and Labour Market Outcomes in Chile. *LABOUR*, 32 (2), 243–260.
- Quinn, S. and Woodruff, C., 2019. Experiments and Entrepreneurship in Developing Countries. *Annual Review of Economics*, 11 (1), 225–248.
- Rosas, N., Acevedo, M.C., and Zaldivar, S., 2022. Starting points matter: Cash plus training effects on youth entrepreneurship, skills, and resilience during an epidemic. *World Development*, 149, 105698.
- Scacco, A. and Warren, S.S., 2018. Can Social Contact Reduce Prejudice and Discrimination? Evidence from a Field Experiment in Nigeria. *American Political Science Review*, 112 (3), 654–677.
- Subramanian, N., 2019. Workplace Attributes and Women’s Labor Supply Decisions: Evidence from a Randomized Experiment.
- Tarekegne, C., Wesselink, R., Biemans, H.J.A., and Mulder, M., 2023. The effects of comprehensive competence-based training on competence development and performance improvement of smallholder farmers: An Ethiopian case study. *International Journal of Training and Development*, ijtd.12314.
- Vicente, P.C. and Vilela, I., 2022. Preventing Islamic radicalization: Experimental evidence on anti-social behavior. *Journal of Comparative Economics*, 50 (2), 474–485.
- Vivarelli, M., 2014. Innovation, Employment and Skills in Advanced and Developing Countries: A Survey of Economic Literature. *Journal of Economic Issues*, 48 (1), 123–154.

Wheeler, L., Garlick, R., Johnson, E., Shaw, P., and Gargano, M., 2022. LinkedIn(to) Job Opportunities: Experimental Evidence from Job Readiness Training. *American Economic Journal: Applied Economics*, 14 (2), 101–125.

World Bank, 2019. Creating Markets in Ethiopia.