Preferences for Internship among the Youth and Kenya’s Labour Market[[1]](#footnote-1)

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**ABSTRACT**

This paper analyzes internship demand among enterprises within the manufacturing and services sectors in Kenya. Our analyses suggest that youth-centric firms were indifferent towards hiring or not hiring interns irrespective of workforce size, labour-related constraints, sector, typical white-collar workers’ occupation and educational attainment, or satisfaction with workers’ educational attainment. These enterprises were more likely to hire interns when large or when facing rising training costs for white-collar workers, and less likely to hire interns when their average employee is mismatched on a single skill relative to none. Across all firms, demand for interns rose when white-collar workers had tertiary education or were typically professionals/ technicians; but less likely to hire interns when a typical employee was mismatched on one skill. These findings call for a radical removal of single-skilled-biased training, greater investment in tertiary education, and enterprise expansion. The latter could be realized via greater emphasis on pitching innovative ideas during events such as conferences, congresses, workshops, and symposia to attract venture capital and business angels.

**Key words**: Industry-educational institutions contact; Internship; skills mismatch; youth employment

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# **INTRODUCTION**

## **BACKGROUND AND PROBLEM FRAMING**

This paper analyzes firms’ preferences for internships within the context of heterogenous worker skills, rising training costs, and dominance of within-firm professionals. At the theoretical level, quality of internship experience and industrial attachment affect young people’s labour market outcomes depending on the context. Empirically, interns are either pure interns or hidden interns, i.e., those employed but earning an income of zero ([Hunt & Scott, 2020](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\03075079.2018.1541450)). Internships have gained traction among researchers and policymakers as a key driver to addressing open unemployment and skills mismatch while complementing work-integrated learning across universities and mid-level colleges ([Jackson & Dean, 2023](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\07294360.2022.2048638)). This importance stretches beyond mandatory within-curricular internships ([Bolli et al, 2021](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1007\s11162-021-09637-9))—common in some fields of study such as medicine via the residency program and law via pupilage programs ([McGrail et al, 2020](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1186\s12913-020-05779-1), [2024](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1186\s12913-024-10683-z))—to voluntary internships and graduate internship programs which augment firms’ pool of high-quality prospective employees ([Tobback et al, 2024](https://doi.org/10.1007/s10645-023-09432-0)).

Literature indicates that on-the-job exposure among students and young graduates smooth the path of post-school employment ([Baert et al, 2021](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1016\j.econedurev.2021.102141)), and enhances graduates’ quality of job search while entrenching inequitable employment prospects ([Divan et al, 2022](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\0309877X.2021.2020220); [McKenzie et al, 2016](file:///C:\Users\ADMIN\Desktop\KIPPRA%202025\10.1186\s40175-016-0048-8); [Bolli et al, 2021](https://doi.org/10.1007/s11162-021-09637-9)). In some instances, internship experience complements studies (e.g., improved academic performance post-internship ([Divan et al, 2022](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\0309877X.2021.2020220))) while enabling students to revise their expectations about the job market alongside aligning career preferences. What is less known is the interaction among households and firms in shaping the stock and flow of internships, and the extent to which these flows affect open unemployment in Kenya.

Against this background, this current work analyses the demand for interns across enterprises within manufacturing and services sectors in Kenya. Two auxiliary objectives are also realized—an analysis of the demand for new employees, and the likelihood of enterprises contacting educational institutions for either employee sourcing or other forms of firm-educational institutional engagements.

This paper is closely related to three works-in-progress focusing on Kenya. Mbithe et al (undated) consider unemployment spells within the context of fields of study, reservation wages, and job search effort. The authors indicate the immateriality of internship/ apprenticeship experience, reservation wages, and job search effort. Based on the authors’ methods and the 2013 STEP Skills Measurement Survey dataset, it is inferred that unemployment spells among youth and other adults arose largely from unequal treatment of workers on the basis of age. Mbula et al (undated) utilize the same dataset within the context of additional certificates and additional academic qualifications. The authors indicate that young people were likelier to have an additional professional certificate than other adults. Simiyu & Njai (undated) utilize the 2021 Kenya Time Use Survey dataset in analyze labour market outcomes among the youth and other adults within the context of time preferences and unpaid work. The authors indicate that a greater devotion of time to unpaid work reduced the average paid work length and the number of economic activities but insignificantly affected the likelihood of experiencing shorter spells. This effect was large in the youth sample relative to the full sample. Our paper takes residual unpaid internships that characterize underemployment as given, and distinguish between pre- and post-graduation internships due to their differential impact on long-term employability ([Hunt & Scott, 2020](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\03075079.2018.1541450)). This assumption is validated by household level surveys such as the 2013, 2016, 2018, 2021, and 2024 waves of the Financial Access Household Survey and eight waves of the 2020-2022 Covid-19 Rapid Response Phone Surveys among Kenyan nationals. These surveys indicate some employed workers earning zero incomes or a monthly income not exceeding Kenya Shilling 1000, an equivalent of Kenya Shillings 50 a day. Given this distinction, we then focus on pre-graduation internship, and their demand from the firm’s side.

## **KENYAN CONTEXT**

Kenya’s labour market, as elsewhere, is characterized by: [open unemployment](https://www.knbs.or.ke/reports/quarterly-labour-force-report-2022-quarter-4/) that draws some job seekers towards [un]paid internships; the existence of unpaid workers or “hidden interns” over extended periods of time and [indistinguishability of interns from employees](https://matthewandpartnersllp.com/is-an-intern-an-employee/); and a notable skills and experience mismatch which imposes barriers in filling specific vacancies within certain fields of work while raising costs of hiring within firms ([ESOS, 2022](https://labourmarket.go.ke/media/resources/EMPLOYER_SKILLS_AND_OCCUPATIONS_SURVEYESOS_BASIC_REPORT_2BrGTEJ.pdf)). An additional feature is the continuous flow of student interns, attachés, and apprentices seeking work-integrated learning in a loose labour market. These features collectively create imperfections on the labour market.

Policies aimed at improving labour market outcomes are anchored on the National Employment Authority Act 2016, the Industrial Training Act, and [the Employment Act 2007](https://matthewandpartnersllp.com/is-an-intern-an-employee/). These policies are harmonized within three frameworks—[National Guidelines for Sector Skills Committees](https://www.labour.go.ke/sites/default/files/2024-04/National%20Guidelines%20for%20Sector%20Skills%20Committees%20in%20Kenya.pdf), National Policy Framework on Career Guidance, and the National Skills Development Policy—which are supported by various state agencies including the National Industrial Training Authority and the National Employment Authority. There have been various commitments by the government, e.g., the rollout of state-backed internships extending tax credits to firms which hire at least ten interns.

Nevertheless, labour market distortions have persisted. We estimate in Figure 1 that 6.3-9.2percent of Kenyans earned less than Kenya Shilling 1000 a month over the 2018-2021period, and; hence were “hidden interns”. These estimates were largely driven by casual employment rather than non-casual employment. Hidden interns refer to workers in paid employment receiving negligible to no compensation (Hunt & Scott, 2020).

Figure 1: Hidden interns in Kenya



The plot captures sampled individuals whose income data was available, and is based on FinAccess Household Surveys, Kenya Population and Households Census, and the COVID-19 Rapid Response Phone Surveys.

# **LITERATURE OVERVIEW**

The Diamond-Mortensen-Pisasarides search and marching model is the underlying theory for this paper (Pissarides, 2000; Mortensen & Pissarides, 1994; Diamond, 1982). This model establishes a Nash equilibrium which characterizes the employment consensus arrived at by a prospective employer and job seeker whenever both parties meet. This consensus is important because of rising opportunity cost to both parties in the event they meet but fail to agree on an offer. In the current context, when a prospective intern and an enterprise with an internship position meet and fail to agree on the internship offer, both parties continue with the search which is both time-consuming and costly (Elbsy & Gottfries, 2022)—a prospective intern searches for another employer while the firm looks for another intern. This process may go on indefinitely whenever either signaling or screening is imperfect for both parties, thereby characterizing a “tug-of-war” (Fei et al, 2020). Sometimes, both parties may settle for a mismatch both in terms of expectations and quality of each other (Bolli et al, 2021; Fei et al, 2020).

Imperfect signaling arises whenever a prospective intern cannot gauge the suitability/ quality of a given enterprise for an internship experience; e.g., some enterprises could be looking for interns to run errands or as a low-cost replacement of full-time workers whereas other enterprises could be keen on within-firm pre-hire grooming via targeted internships (Smith & Green, 2021; O’Higgins & Caro, 2021; Williams et al, 2024; Fei et al, 2020; Shah & Sturzenegger, 2022). Williams et al (2024) indicate that some enterprises create internship vacancies as stepping stones to early career recruitment. The authors further reveal a heterogenous internship experience quality across employers – with high-quality internships being offered by about 34% of employers[[2]](#footnote-2). This information is, nevertheless, not disclosed to prospective interns. Similarly, an enterprise with an internship position may not effectively gauge a prospective applicant’s ability to successfully complete an internship experience based on the received signals—e.g., when an enterprise expects a prospective intern to be well-trained prior to internship commencement (Fei et al, 2020). Following Spence (1973), imperfect screening could be driven by scanty information accessible to both the enterprise and the prospective intern regarding the other party. Imperfect screening and imperfect signaling warrant the existence of another party which serves as a referrer or placement agency, and offers initial screening to both prospective interns and enterprises with internship vacancies (Carranza et al, 2022). This third party also bridges informational gaps by ensuring that existing internship vacancies are revealed to prospective interns—this is important since some enterprises end up having unfilled internship vacancies due to informational barriers (Williams et al, 2024) whereas some interns end up taking positions which are not appropriate for them (Elbsy & Gottfries, 2022).

Empirical studies consider educational institutions as a key placement agency alongside other referrers, including: current and former employees of the enterprise, and the networks forged among firms and prospective workers/ interns (Smith & Green, 2021). Since some enterprises maintain contact with educational institutions for the purpose of hiring new employees or interns (Smith & Green, 2021), a natural starting point is to think of this contact as an essential component in matching the preference lists of enterprises with internship positions and those of prospective interns. This contact extends enterprise-educational institution partnership to include sharing costs related to internship programs between enterprises and educational institutions (Williams et al, 2024) and enabling educational institutions to assess their curricula’s quality for accreditation purposes (Maertz Jr. et al, 2013). We offer an extensive discussion of the matching process in the next section.

A further synthesis of empirical studies reveal that internship experience is not always associated with better labour market outcomes after school. In particular, the signaling effect of internships could play either way—individuals pursuing internships as a coverup for low ability/ unemployability or interns being the motivated, aggressive, high-ability individuals. These studies also indicate the differential effect of internships arising from the nature, and circumstances under which an internship is considered. These studies omit the possibility of internships arising from strategic preference lists which inform the intern-employer matching process.

Margaryan et al (2022) harmonize surveys from graduates across universities in Germany. In analysing returns to internships, the authors employ both instrumental variable (IV) and ordinary least squares (OLS) estimation. The IV estimation instrumented uptake of firm internship by mandatory internships at the university level. Internship experience was associated with 6% higher returns among worker graduates. These internship returns also varied across fields of study. Internship experience was more rewarding among graduates from social sciences and humanities, and less rewarding for economics, business, engineering, mathematics, or science graduates. This was attributed weak orientation to the labour market which was characteristic of social sciences and humanities. Findings further reveal that mandatory internships within engineering, architecture, law, and medicine never mattered for individuals’ choice of study program or university choice.

Silva et al (2018) consider internships within the context of Portugal’s work-integrated learning, and their significance in raising both employability and employment of graduates. The analysis sample was drawn from 138 programs with internship element out of the 190 programs which had been gazetted in the 2008-2009 period. Polytechnic institutions accounted for 108 programs against 30 programs across universities. The sample excluded programs with extracurricular internships or internship experiences which were unsupervised. Internship experience was dichotomized into thick versus thin in analysing the difference in unemployment rate between graduates from programs with within-program internships and unemployment rate 15-24-year-olds with tertiary education. The signed-rank test suggests that graduates from programs which incorporated internships after Bologna reforms evidenced lower unemployment rate compared to counterparts from maintained internships post-reform. Internships generally reduced unemployment rate for graduates with shorter job search durations. The authors argue that internships were professionally valuable, and hence participation in curricular internships signalled one’s ability to undertake a professional internship of 9-12 months. That is, employer’s uncertainty over a professional intern’s productivity declined drastically when for individuals with prior experience as curricular interns. This subsequently raised employment rate among interns with job search durations exceeding 12months. Although internship experience was generally beneficial, university-intern graduates benefited more relative to polytechnic-intern graduate in terms of long-run labour market absorption.

Franco et al (2019) analyse collaborations between firms and institutions of higher learning, and the extent to which these collaborations shape preferences for internships among students. Utilizing a sample of 215 students from two institutions[[3]](#footnote-3)— Porto Polytechnic Institute, and University of Tra ́s-os-Montes and Alto Douro—in Portugal, the authors interrogate internships’ assessment by students across four domains— the host institution and their orientation, orientation of the learning institution, and internship’s organization. Sampled students had previously undertaken curricular internships in 2016. Internship’s organization was based on the extent to which the internship integrated an intern’s personal involvement and involvement of the host firm in ensuring the intern and the host firm realized their objectives smoothly. OLS estimates suggest that well-structured internships and the host institution significantly enhanced personal involvement of interns. Personal involvement in the internship was high for university students relative to polytechnic counterparts.

Hora et al (2019) present a needs-based assessment of internships based on perception among fifty-seven students from three colleges in the United States. Drawing on three analyses techniques focusing on social network, thematic areas, and saliency, the authors reveal non-homogenous valuation of internship benefits among students. In particular, participant weighting was unevenly spread across the four most salient benefits—connections and building networks, internship-related compensation and potential on-boarding as an employee, learning and assessing available career options, and experience which could be later leveraged as a bargaining chip on the resume. These differences arose largely from non-uniform aspirational perspectives, and presence/ absence of prior internship experience among the participants.

Van Mol (2017) analyses recruitment perspectives of employers in Europe on the cross-border mobility of students. In the analysis sample covering 7036 companies across thirty-one countries in 2010[[4]](#footnote-4), the author makes two distinctions—home versus overseas’ internship experience and university training from an overseas’ institution versus home-country qualifications. Results suggest that when considering new hires on the basis of top-notch decision-making skills, computer skills, and language skills, graduates with overseas’ qualifications were preferred to counterparts from home institutions. Experience of an abroad internship was preferred to home-country internship experience when employers considered decision-making skills and foreign language skills. This reflected the signalling effect of study abroad programs and overseas’ internship experience. Whereas international experience raised employment prospects outside Europe, unfamiliarity with overseas qualifications among European employers reduced within-Europe employment. International experience thus reduced job prospects, thereby limiting career-related benefits when employers were less concerned about decision-making skills and foreign language skills.

Internship experiences vary with respect to their structure (unpaid versus paid), design and duration, and their contribution towards development of [vocational] skills and job satisfaction. Rogers et al (2021) indicate that unpaid internships tend to be less structured[[5]](#footnote-5) compared to paid internships. This then reduces job satisfaction among unpaid interns relative to paid interns. Poorly-structured unpaid internships are less likely to augment an intern’s career development. This arises from unpaid interns not receiving feedback that is relevant to the job, being assigned less-meaningful tasks, and missing out on performance-related information.

Baert et al (2021) exploit a randomized field experiment involving the submission of 1248 realistic but inexistent/ fake resumes in response to job vacancies in Belgium’s Brussels-Capital and the Dutch-speaking Flanders regions. The authors incorporated an internship experience during the master’s program, with the experiment focusing on job market candidates since graduation in June 2015. This internship which was unpaid, voluntary, and lasted three months. Two applications were submitted to each of the 624 employers for starter jobs. One application explicitly mentioned intra-curricular internship experience (type-B) whereas the second application highlighted the internship experience as extra-curricular (type-A). Bivariate analyses suggest that applicants from social sciences and humanities with internship experience received 26.3% more invitations for interview compared to colleagues without internship experience. Whereas interview invitation rates based on extended resumes were similar among applicants with and without internship experience, internship experience was associated with 20.4% more invitations among applicants with limited resumes. Employing the logistic and logit models, the authors document that internship experience raised the odds of interview invitation by 16.3%. This estimate rose to 18.8% when controls, excluding firm size, were incorporated, and to 20.1% when controlling for firm size, sectoral technology intensity, and their interactions with internship experience. Interaction effects were statistically not different from zero. The authors argue that internship experience signaled an applicant’s motivation to work since highly-motivated individuals would be aggressive in undertaking internships.

Bittman & Zorn (2020) tie down individual-level aggregated internship experience, voluntary versus mandatory regular internships, and the interplay between internships and within-study experiences to graduates’ outcomes on Austria’s labour market. The analysis utilized a dataset covering 23816 graduates from 116659 individuals in the graduating classes of 2003-2004 to 2007-2008 across Austrian universities of applied sciences and universities. This sample excluded graduates from highly-regulated fields—veterinary medicine, teaching, law, and medicine—alongside individuals performing family care responsibilities, the self-employed, and students. Income estimation in the OLS regression suggested that incomes significantly rose for longer voluntary internship durations but remained unaffected by the duration of mandatory internships. Undertaking a voluntary internship raised labour income when controls are incorporated[[6]](#footnote-6). Participants in mandatory internships had lower incomes compared to non-participants in the model with/ without controls. This is attributed to mandatory internship programs forcing less-able students to dedicate time and resources towards the acquisition of internship experience. Results from the logit regressions suggest that voluntary internships raises both job satisfaction and the match between study program and job. Extra-curricular internships were beneficial to students with[out] field-related work experience.

Zuo et al (2019) delink interns in a field related to their study field from non-major-related interns in a contingency model. Utilizing data from two-wave survey in Eastern China among 787 university graduates, the authors then moderate for the match between job and major, education level, and discipline type. Interns in a field related to their area of study had higher starting salaries than interns in non-major-related fields. College major-related internships were associated with greater skills development. Non-major-related internships undermined skills development among graduates from science, technology, engineering, and mathematics fields. The authors argue that an internship within an individual’s field of study signals an individual’s capability, acquisition of knowledge related to the job, and aligned career plans.

Other relevant studies are captured in Table 1.

Table 1: Related studies

|  |  |  |
| --- | --- | --- |
| Study | Geographical coverage, period, and data | Methods and key findings |
| Jaeger et al ([2023](https://www.sciencedirect.com/science/article/abs/pii/S0167268123000689)) | United States—summer of 2015-2016 | An audit of 11000 résumés and web-scraped advertisements from an internship-specific website. Applicants were more likely to be in full-time and paid internships the closer their fields of study matched the field of work. Advertisements for paid internships were more, the lower the unemployment rate within a locality. Lastly, firms were less responsive to paid internship applicants than to unpaid internship applicants. |
| Cerulli-Hermes (2017) | Germany— graduate interns | Propensity score matching— lower employment rate and lower salaries among workers with internship experience compared to peers without internship experience. |
| Meglio et al (2022) | Spain—university graduates | Probit and ordinary least squares—internships enhanced skills utilization, job quality, and job search without fostering education-job match four years after graduation. |
| Margaryan et al (2022) | Germany—graduate survey longitudinal data | Instrumental variable estimation—interns from fields with weaker labor market integration experienced smooth labor market transition, and skills development compared to their counterparts. |
| Tu (2022) | United States | Systematic review of longitudinal studies—internships were associated improved academic performance, labor market outcomes by signaling higher productivity and skills, and career adaptability post-internship. A greater preference for voluntary to mandatory internships. |
| Mato-Diaz et al (2023) | European Union—interns within public or private firms | Counterfactual analysis—private enterprise interns had higher employment prospects than interns from public enterprises. |
| O’Connor & Bodicoat (2016) | England— university graduates engaging/ disengaging in internships in the pre-1992 period | Internships were considered valuable among engagers but worthless and exploitative among the disengaged. |
| Pinto & Pereira (2019) | Portugal—international vis-à-vis domestic interns in 194 enterprises | Experimental between-subject factorial design. Domestic interns were just suitable and employable as international interns. The never-interns were least suitable for jobs. Internship experience enabled graduate job seekers to align expectations about their unique contribution. |
| Urquia-Grande & Estebanez (2020) | Spain— students, academic supervisors, and employers | Triangular analysis and linear regression—internships bridged the expected skills gap related to cognition, creativity, and work culture integration. |
| Mason et al (2022) | Sydney, Australia—49 student interns | Students preferred undertaking internship as they valued information, connection, skills and experiences developed through their internship period. Further, most students’ career goals did not change, rather their self-efficacy and social capital improved. Social connections were leveraged for career related and skills growth among the interns. |
| Wolfgram & Ahrens (2022) | United States— students from five colleges | Focus group discussions—students undertook multiple internships within the socio-cultural context. Internships offered valuable experiences related to navigating job interviews, skills acquisition, and goal-setting. |
| Ebner et al (2021) | Switzerland and Germany—80 undergrad and post-grad students | Positively evaluated internships contributed to graduates' self-perceived employability by means of reduced career-entry worries over an eight-week period and hope for obtaining a satisfactory career |
| Kapareliotis et al (2019) | Greece – student’s perception on work readiness after completing internship program | Students who attended internship programs offered an affirmation to all components of constructed work readiness: professional skills, high-order skills, effective application of basic academic skills, and awareness of employers’ expectations. Intrinsic rewards were more valuable compared to extrinsic rewards. |
| Jerez Gomez et al (2023) | 13,565 interns in 27 countries | Worker’s employability was curvi-linear in internship experience. The initially positive effects diminished over time. Targeted interns’ motivation significantly enhanced their employment prospects. These motivation effects were moderated by internship placement’s formalization. |

# **METHODOLOGY**

## **MATCHING PROCESS**

This paper’s goal was to analyze firms’ demand for interns in Kenya. Theory suggested that imperfect screening and imperfect signaling interferes with the ability of prospective interns and enterprises with internship positions to find suitable matches for each other (Cerulli-Harms, 2017; Bolli et al, 2021; Carranza et al, 2022). The underlying assumption was that both parties have a list of the qualities considered preferable about each other. These qualities – e.g., nature of the internship and an intern’s success—constitute preference lists (Williams et al, 2024; Shah & Sturzenegger, 2022). Empirical literature indicated that prospective interns and enterprises with internship vacancies rely on third parties – e.g., referrers/ recommenders, and educational institutions—as placement agencies (Smith & Green, 2021). This reliance arises in part because prospective interns and prospective employers have limited information about each other (Carranza et al, 2022). These agencies in turn enable the parties to overcome, at least in part, challenges related to distorted signal, and simultaneously reduce the cost of screening and match-making. The success of explicit matching between interns and firms depends on a preference list that each has ([Ren et al, 2021](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1109\TETCI.2021.3067655)) conditional on prospective interns actually initiating applications ([Vyborny et al, 2024](https://g2lm-lic.iza.org/publications/wp/why-dont-jobseekers-search-more-barriers-and-returns-to-search-on-a-job-matching-platform/)).

Enterprises with internship vacancies then share these openings with educational institutions – which is a natural outcome for enterprises which are in contact with educational institutions. Educational institutions in turn request interested students to apply through respective placement offices. At the preliminary stage, placement offices within educational institutions coordinate initial screening of the applications based on the area of specialization, curriculum vitae, and cover letters, and prepare a suitable longlist of applicants for each opening. This is shared with enterprises which use the placement offices’ assessment/ rating of the applicants to prepare a shortlist. Shortlisted candidates are subsequently invited for interview or onboarded without an interview. This approach reduces the cost of search for suitable matches between prospective interns and enterprises. This approach further emphasizes the centrality of contact with educational institutions in matching interns to firms.

With the aforementioned in mind, we first make assumptions related to households and firms, and the building block. Thereafter, we explicitly model internship demand as a function of firms’ contact with educational institutions in the analytical model subsection.

**FIRMS**

Firms are assumed to be identical, and of type k—small, large, or medium. Vacancies within the firm are of two kinds—new hires and interns—and proportional to the size of the firm ([Baert et al, 2021](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1016\j.econedurev.2021.102141)). Akin to the INTERN model in artificial intelligence, we think of interns as of three types: the knowledgeable generalist, a carefully-supervised expert, and an amateur, each reflecting the complexities of knowledge integration ([Shao et al, 2022](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.48550\arXiv.2111.08687))—we define low-quality intern as an amateur whereas the generalist and expert are deemed high-quality. We collapse this distinction, however, and focus on interns in general in the analytical model subsection.

Consider a two-period setting with a fixed number of enterprises such that exit and entry of firms balances out with firms incurring no additional costs in knowledge management, and assume complete absence of mergers, acquisition, and disintegration. Further assume that subsidiary firms make decisions on new hires that are distinct and separate from parent firms; and that firms take skills mismatch as given. Delivering value to its owners nudges the firm to consider internships as feasible in grooming potential employees since it is costly hiring under-skilled and underexperienced workers. At the beginning of period 1, fraction α of firms decides on the number of new hires for both periods given the state of the economy—including perceptions about the education system meeting firms’ needs for skills— and trade unions in period 1, firm’s skills needs in period 1 and expectations about period 2’s skills need, and projected visibility of the firm given its corporate social responsibility (CSR) budget. Decisions made are binding for the two periods—e.g., a pre-determined hiring freeze is operational full length—, and each intern is onboarded for a single time period within the firm and rule out the possibility of interns being absorbed as full-time workers upon completion. In period 2, the remaining fraction 1-α decides on whether or not to hire and the number of new hires depending on the experiences of α firms that hired in period 1, and which reflect complexities in knowledge integration. For simplicity, the value of interns is uniform across firms but not across time periods, and hiring an intern tomorrow is just valuable as hiring today.

A firm’s decision may involve no hires for both periods, hiring in only a single period, or hiring in both periods. We then think of a firm’s problem as one involving minimizing costs of hiring labour while maximizing prestige (Orkin et al, 2024; Cao & Lee, 2023; Sekiguchi et al, 2023)—in any case, some individuals prefer interning in one firm and not another depending on the perceived level of associated prestige—, and not worker exploitation. Let H0 denote the firm’s workforce just before decisions on new hires are made, and assume no employee turnover. In period t, there are Ht and Nt vacancies for employees and interns satisfying:

Cost of hiring a new employee decline with firm size, and is equal to ; i.e., the firm leverages high-quality referrals from its employees and other networks with no single firm enjoying hiring cost advantage over another (Orkin et al, 2024), whereas the firm incurs a fixed per intern cost CN. Since the firm derives prestige from CSR, attracting many talented job seekers, and churning out high-quality interns, the firm’s prestige function is:

Where , and for high-quality interns, but 0 otherwise. This prestige function is maximized subject to:

Wage bill divided by the number of workers is , and m is the number of existing employees corresponding to the new hires. The inequality implies that firms which are less keen on prestige maximization will opt not hiring. It also ensures that firms fail to easily replace existing employees with new hires at lower cost.

In period 1, α firms make hiring decisions with the remaining fraction 1-α firms deploying strategic delay. Households assign individuals into interns, employed, and unemployed in response to firms’ decisions. Fraction α firms hire new employees up to the point where marginal return to prestige equals and , respectively, in period 1 and 2 (k1 refers to type-k firm making decisions in period 1). These firms also fill internship positions up to the point where . i.e., it is easy to think of firms having a fixed number of internship positions fillable each period. Relaxing this assumption would incentivize some firms to have fewer or more interns depending on the evolution of cN across other firms. For 1-α firms, employee positions are filled in period 2 up to the point where marginal return to prestige equals . Thus, the total number of job openings in the two periods is with internships amounting to .

**HOUSEHOLDS**

We assume that each household has only a single member, and its size does not grow over time. This individual is either employed, unemployed, or an intern at any point in time. If unemployed, the individual either seeks for a normal job or unpaid industrial attachment/ low-wage internship with interns getting closer to their target prospective employers ([Divan et al, 2022](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1080\0309877X.2021.2020220)). Interns are at a lower skills base, and hence do not replace full-time employees of the firm. Once a decision on hiring has been made by firms in a given period, all households are informed, and respond in accordance to their employment status and their attitude towards risk. We further assume that open unemployment exists which then nudges risk averse unemployed individuals to undertake internships ([Baert et al, 2021](file:///C:\Users\ADMIN\AppData\Roaming\Microsoft\Word\10.1016\j.econedurev.2021.102141)). The optimal number of such is normalized to a single internship per individual within an industry or field of work that is directly related to her/ his field of study, and once employed, the individual is automatically disqualified from future internship opportunities. This is contrary to Cahuc & Hervelin (2023) which assume apprentices’ retention within training enterprises, and Virkola (2021) which indicates multiple internships per person. This allows us to exclude the effect of prior internship experience on current success as an intern, akin to Jaeger et al ([2023](https://www.sciencedirect.com/science/article/abs/pii/S0167268123000689)). Households optimize utility, u, which is sensitive to employment status such that:

With where e0 captures unemployed workers, eo refers to individuals employed just before a decision is made in period 1, and e1 and e2 captures the number of individuals hired in periods 1 and 2.

## **ANALYTICAL MODEL**

**FIRM-LEVEL INTERNSHIP DEMAND**

From the firm’s side, internship demand estimation is preceded by an estimation of the demand for workers in a regression discontinuity design (RD) setting. This is given by the probability that a firm of type-k and in sector-r hired within the three-year period to the survey. We also estimate the probability that, among firms which hired, an enterprise contacted educational institutions. This is because the demand for interns was reported only for hiring enterprises which contacted educational institutions. The assumption that demand for interns varies discontinuously in the size of the firm—proxied by the number of fulltime permanent employees (Orkin et al, 2024)— allows us to employ an RD. We also assume that size of the firm discontinuously affects the likelihood of enterprises creating new vacancies or contacting educational institutions (Oi & Idson, 1999; Fitzgerald & Ribar, 2001). We then estimate internship demand in the specification:

Where the probability p of open internship in firm i of type-k and in sector r depends on the number of interns N hired in the previous period[[7]](#footnote-7), and the total number of new employee hires H in the last three years[[8]](#footnote-8), and control factors W. Since interns are at a lower skills base, it is assumed that the larger this ratio is, the likelier a firm hires an intern. Workforce falls in either group g—blue-collar/ white-collar and matched or skill-mismatched alongside the number of skills [mis]matched. Open internship existed for a firm which contacted an educational institution to fill an internship position, and 0 otherwise. There are some enterprises which neither hired any workers or interns nor contacted educational institutions. N is proxied by average monthly wage paid to white-collar workers as a ratio of that paid to blue-collar workers.

Captured in W include sector, firm type or size[[9]](#footnote-9), current period’s average wage cost per worker (or monthly wage for type-A worker relative to type-B worker), CSR budgetary allocation proxied by training costs per worker (firms are not guaranteed that workers they train will remain within the firm), workforce quality [given by whether the firm had professionals within, and the number of professionals scaled by the size of the workforce[[10]](#footnote-10)], contact with training/ education institutions, within-firm innovations[[11]](#footnote-11), age of a typical employee, the severity of job seekers’ skills mismatch, and general labour-related challenges facing the firm[[12]](#footnote-12).

In the RD setup for each of the three models, the number of within-firm full-time employees, S, serves as the running variable. S is centered by subtracting the average number of full-time employees within the sector and firm size category. A firm is then assigned to the treated group T=1(S≥0), and to the control group T=0 for S below the threshold. A full model is estimated alongside two models which utilize two subsamples— firms with the average employee being a youth, and non-youth between the worker types. Per worker training costs, and income ratio are transformed using the inverse hyperbolic sine function.

This paper utilizes the 2016 Employer Satisfaction Survey (STEP) (World Bank, 2016, 2018). STEP covered 504 enterprises within the services and manufacturing sectors, and focused on skills shortage and skills gap for white-collar (type-A), and blue-collar (type-B) workers. Workers in type-A perform high-skill jobs such as technicians, professionals, and managers. Type-B workers engage in low-skill jobs such as elementary occupations. Internship demand was captured by firms contacting learning institutions for purposes in sourcing interns.

We consider supply of internships at the household level in a future draft. In that paper, we propose to utilize the 2020-2022 Covid-19 Rapid Response Phone Surveys (RRPS) dataset, and a subsample representing 10percent of individual-level observations from KPHC 2019. We further leave out an analysis of internship as an outcome of decision-making at the household level. The latter is central to Simiyu & Majune (in a related submission) which employ the [2013 World Bank’s STEP](https://microdata.worldbank.org/index.php/catalog/2226) Skills Measurement Household Survey in understanding unemployment spells across fields of study in Kenya. In that draft, the authors explicitly consider contractual work and reservation wages. The idea is that absence of contracts implies that some workers are uncompensated for their effort. As a result, digitalization of contracts could tremendously help. Similarly, general labour market outcomes within the context of time allocation and time preferences are explored in Simiyu & Njai (in a related submission).

## **DATA AND LIMITATIONS**

Our main focus is on enterprises’ demand for interns in Kenya. There are various enterprise surveys conducted in Kenya—including: 2016 STEP, periodic MSME Tracker surveys, enterprise surveys by the World Bank (spanning the years 2007, 2013, and 2018), and the 2012 Kenya Innovation Survey. It is only the 2016 STEP which captures comprehensive data on internships across enterprises alongside other relevant variables which are of interest to this work. We understand eight years have lapsed since the compilation of STEP dataset. At the moment, there is no other up-to-date dataset which matches the richness of the 2016 STEP. Hence, we answer our central questions via utilization of this rich dataset.

Some of the questions over which responses were collected in STEP included: whether an enterprise contacted an educational institution in the preceding year; whether the contact was for purposes of employee training, collaboration, hiring new employees, or interns; whether the enterprise had tried hiring in the preceding three years, and the challenges it faced—including labour constraints and skills gap; and composition of workers in terms of occupation, experience level, age, skills level, job type (white-collar or blue-collar).

The current study’s limitations arise from data needs. One, the dataset considered covered only private-sector firms yet internships offered by the private sector vis-à-vis the public sector differ in terms of scope, characterization, and motive[[13]](#footnote-13). Two, a distinction between domestic and foreign internships is missing. On the latter, we assume that all internships were within Kenya. With respect to the former, we consider a larger dataset, the 2019 KPHC, in a future draft. However, this dataset omits a distinction between the two. The closest possibility to breaking through is captured in Simiyu & Njai (included in the submission). The authors characterize employment by sector of the main employer, including the county and central government. Even then, interns constitute less than 1percent of the total employed. Three, this analysis assumes a static preference demand. Perturbations on the labour market imply that internship preferences across firms evolve over time[[14]](#footnote-14).

# **EMPIRICAL FINDINGS**

## **CROSS-SECTIONAL ANALYSIS**

A description of the data is based on worker-age dichotomy captured in Table 3 (in the APPENDIX). Firms with average employee age for both type-A (white-collar) and type-B (blue-collar) in the [15, 35] years are categorized as youth-centric. These account for 40.5percent of the sampled firms. The remainder (57.3percent) are considered non-youth-centric. 11 enterprises are excluded in this exercise because data on typical employee age was missing.

There are no noticeable differences in average workforce size (in years 2014, 2015, and 2016), inclination to hire (overall as well as for specific worker-type), contacting schools (generally and for either worker recruitment or interns’ sourcing), firm size, sectoral distribution, skills mismatch, type-B worker’s educational level, and satisfaction with type-B worker’s educational attainment between youth-centric and non-youth-centric enterprises. Type-B workers were relatively younger for both firm types, and actually youthful for non-youth-centric firms. Among non-youth-centric firms, youth were likelier type-B workers (62%) but only constituted 18% of type-A workers.

These firms, however, differed materially across some other domains. Youth-centric firms had a large share of professionals (16% versus 12%), much lower income ratio (2.75times versus 3.17), large share of workers with post-secondary school training, more satisfied with type-A worker’s educational attainment, reported less severe labour-related constraints, likelier to recruit type-B workers from schools, and about 4times likelier to exploit all four innovation types—procedural, production, managerial, and methods— relative to non-youth-centric enterprises.

We then consider internship demand using smoothing scatterplots from a locally-weighted regression (lowess). This is captured in Figure 2. Preference for type-A interns generally rises along a path in type-A workers’ average age across youth-centric enterprises. among non-youth-centric enterprises, type-A interns’ demand rises only in ages 28-40years but falls everywhere outside this range. Preference for type-B interns among youth-centric firms declines for average type-A workers younger than 28years but rises thereafter. Among non-youth-centric enterprises, the demand for type-B interns rises in average type-A worker age up to 28years, nearly plateaus up to 36years before declining up to age 48. These plots suggest that internship demand is a cubic function in average age of a firm’s typical worker. We also consider the share of professionals as a function of workers’ average age. In the APPENDIX, we show that the share of professionals rises in average age in youth-centric firms up to 25-28years before declining thereafter.

Figure 2: Internship demand in a lowess plot



## **ESTIMATED MODEL**

We estimate three separate models in an RD setup and capture local average treatment effect (LATE) estimates in Table 2, and robust RD results for the model with controls in Table 4, in the APPENDIX. The separate models explain the probability that a firm hired in the three-year period to the survey (columns 1-2), contacted educational institutions for purposes of hiring workers, interns, or training (columns 3-4), and hired interns (columns 5-6). Results for all firms are captured in odd columns whereas youth-centric enterprises are captured in even columns. Youth-centric enterprises refer to firms whose employees’ average age for both type-A and type-B jobs was at most thirty-five years.

Estimated LATE suggests that treated firms—i.e., with a workforce no less than the average in their respective sector and firm size group—were 21.6percent likely to have hired new employees compared to untreated firms (enterprises with a workforce below the threshold). Among treated firms, this likelihood declines by 1.2percent for an additional employee. The treatment effect derivative (TED) is not different from zero; thereby, suggesting that inferences can be drawn even for observations further from the threshold. This is in line with the assumption earlier made that size of the workforce affects hiring when firms rely on within-firm employees for information on potential new hires (Orkin et al, 2024). A larger workforce then implies more possibilities of sourcing new employees via within-firm referral. In the youth-centric enterprises’ sample, LATE is not different from zero. Youth-centric enterprises are generally small in size which limits referral possibilities since fewer employees imply fewer extra-firm connections (Orkin et al, 2024). This problem, coupled with low visibility among small firms and general skills-biased within-firm activities (Rodrik & Sandhu, 2024) restrain small enterprises from enjoying operational advantages arising from size.

Table 2: LATE Estimate

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Hire | Hire | Contact | contact | intern | intern |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Running variable | -0.0121\*\* | -0.00534 | -0.000128 | -0.00613 | -0.0125 | 0.00411 |
|  | (0.00576) | (0.00915) | (0.00542) | (0.0136) | (0.0183) | (0.0282) |
| RD Estimate | 0.216\*\* | 0.115 | 0.0466 | -0.0323 | -0.0231 | 0.0291 |
|  | (0.0838) | (0.124) | (0.0939) | (0.146) | (0.167) | (0.246) |
| TED | 0.0135 | 0.00744 | -0.00594 | 0.0258 | 0.0402 | 0.0156 |
|  | (0.0108) | (0.0166) | (0.0113) | (0.0213) | (0.0295) | (0.0421) |
| Constant | 0.610\*\*\* | 0.689\*\*\* | 0.426\*\*\* | 0.384\*\*\* | 0.318\*\*\* | 0.269 |
|  | (0.0562) | (0.0810) | (0.0567) | (0.0974) | (0.109) | (0.163) |
| Bandwidth | 23.396 | 20.547 | 27.078 | 18.948 | 19.813 | 15.235 |
| Observations | 330 | 159 | 341 | 152 | 125 | 59 |
| R-squared | 0.041 | 0.015 | 0.001 | 0.010 | 0.015 | 0.027 |

Odd columns refer to all sampled enterprises whereas even columns capture youth-centric sample. Parentheses report standard errors which are robust. \*\*\*, \*\*, and \*, respectively, indicate that the corresponding coefficient is statistically not zero at 0.01, 0.05, and 0.1 levels. Derivative of the treatment effect is captured by TED. For a firm which had hired in the 3year leading to the survey date, hire is assigned 1, and 0 otherwise. Contact takes on a value of 1 for an enterprise which contacted educational institutions for either hiring, internships, or training employees, and 0 for non-contactors. Intern assumes 0 for a firm which never contacted schools for the purpose of hiring interns, and 1 for one which did.

Smoothness around the cutoff for new employees’ demand is further corroborated in a fuzzy RD plot captured in Figure 3. Treated enterprises were just likely to contact educational institutions and hire interns as untreated counterparts for both the full enterprise sample and the youth-centric firms’ subsample. This suggests that contacting educational institutions or hiring interns is independent of the number of workers within a firm. The Rise & Learn 2021 Report indicates that enterprises in Kenya contact educational institutions they have a Memorandum of Understanding (MoU) with. This does not depend on firm’s size but on what either party desires to realize out of the MoU; these include meeting a firms’ business-related needs.

In Table 4 (see APPENDIX), we show that large or medium-sized enterprises were just likely to hire new employees as small firms. However, large enterprises were 23percent more likely to contact educational institutions than small firms. This could reflect organizational prestige enjoyed by large firms; besides, large firms with resource withal are likely more attractive to educational institutions, hence educational institutions are likely to be receptive of them (Atta-Owusu et al, 2021). These resources could include internship opportunities for learners on work-study programs alongside industrial attachment (Sekiguchi et al, 2023). This is corroborated in columns 5-6 which suggest that large youth-centric enterprises were 26percent more likely to hire interns from schools compared to small youth-centric enterprises. This finding is not in tandem with van Mol (2017) which indicates the immateriality of firm size on the demand of domestic and foreign interns.



Figure 3: Cutoff smoothness for new hires demand

Occupational position of existing employees insignificantly affected the hiring of new employees. Youth-centric enterprises whose typical workers were associate professionals or technicians were 22percent more likely to contact educational schools compared counterparts with managers. It is likely that enterprises contacted educational institutions for training-related support. In the full-enterprise sample, firms with typical workers being technicians or professionals were 24-25percent likely to hire interns compared to counterparts with managers. This follows from the natural inclination of firms to onboard interns for technical or professional roles, and rarely to groom them into managers. Technical and professional workers tend to be graduates. This finding conflicts van Mol (2017) which concludes that internship demand, in a thirty-one-country sample, was not affected by the share of graduates within the enterprise.

Enterprises reporting that typical workers had 1 or 3 mismatched skills were 10-16percent more likely to hire new employees compared to enterprises reporting no skills mismatch. Compared to firms with no reported employee skills mismatch, enterprises with one reported employee skills mismatch were 19-24percent less likely to hire interns. It could be that the combination of specific mismatched skills mattered in line with van Mol (2017). For instance, individuals with acute analytical skills could also be good at numbers or decision-making. For the case of hiring interns, it could be that the single mismatched or missing skill among employees was the single-most relevant skill in the successful onboarding of interns. These combinations could in turn be biased depending on the priority given to specific skills from degree program instruction at training/ learning institutions (McGrail et al, 2020). This finding further hints at a tradeoff between new employee hires and interns (Stewart, 2021; Paz-Fuchs, 2021). Empirical evidence from other countries, e.g., Hunt & Scott (2020), about 58% of internship positions are unpaid for in some occupations in general with unpaid internships constituting over three-quarters of all internships in occupations such as motion picture and journalism. Thus, our assumption that the pool of interns expands at the expense of new employee hiring is validated in part, and the tradeoff arises from grooming workers. Enterprises reporting at least four mismatched worker skills were 20percent likely to contact educational institutions.

Given the tradeoff between hiring new employees and creating internship positions (Hardy & McCasland, 2023; Jaeger et al, 2023; Wolfram & Ahrens, 2022), we look at costs of worker training. Rising worker training costs induced enterprises to both contact educational institutions and hire interns. i.e., as training costs rose by 1%, enterprises were 3.2% and 4.7% more likely to, respectively, contact educational institutions and hire interns. As interns acquired work-related skills, training costs insignificantly affected demand for new employees. This could be due to either work which would otherwise be done by new employees being carried out by interns; or, groomed interns being later onboarded as new employees, and thereby inducing insignificant training costs [i.e., no need for training an already equipped worker]. Oswald-Egg & Siegenthaler (2023) indicate that, in the presence of skilled external workers, firms lower training costs by hiring them.

A rising share of professionals reduced the likelihood of hiring new employees in youth-centric firms but raised that of contacting educational institutions across both firm samples. Since mismatch insignificantly mattered in hiring decisions among youth-centric firms, a rising share of professionals necessarily implied that available vacancies were filled up within the firm. An implication of this result is that job creation when the supply of professionals is rising could be realized via either expanding firm size [e.g., setting up new and larger enterprises, integrating existing firms into larger ones provided minimum efficient scale is yet to be realized, or channeling support towards startups]. Increased contact with educational institutions could be largely driven by demand for collaboration between enterprises and learning institutions (Terán-Bustamante et al, 2021; Ćudić et al, 2022). These collaborations appear to be the case when enterprises are short on innovations. We show that enterprises were 21-25percent less likely to contact learning institutions when able to innovate across all four fronts compared to non-innovators. We could then think of these results to suggest that firms with a rising share of professionals contacted educational institutions with the aim of solving problems related to within-firm innovation. Likewise, a larger pool of professionals relative to a firm’s workforce insignificantly affected the demand for interns. This finding aligns with van Mol (2017) documenting a larger graduate share within enterprises never mattered in the demand for interns.

Enterprises facing moderate to major or very severe labour-related constraints were 28-31percent and 25-32percent more likely to respectively hire new workers or contact learning institutions. We suspect enterprises hired in the midst of labour constraints hoping that new employees would enable them address these constraints via innovation. These enterprises also contacted learning institutions anticipating collaborations which would effectively dismantle some of the constraints. However, the contact itself was not anchored on solely hiring new employees.

# **KEY FINDINGS AND THE CONCLUSION**

This paper analyzed preferences for interns within the context of reducing labour-related costs in Kenya. The key explanatory variable was firm size proxied by its workforce in an RD setup. Findings suggested that firms with larger workforce relative to their sector-firm size group were just likely to hire interns as counterparts with smaller workforce. A larger workforce, however, induced firms to hire new employees but insignificantly affected the likelihood of contacting educational institutions. The composition of the workforce mattered for youth-centric firms in a manner different to that among all enterprises. Across all firms, dominance of technicians or professionals raised the probability of hiring interns by 24-25% above that reported among enterprises with typical employees being managers. Rising worker training costs incentivized enterprises to contact educational institutions and hire interns. A larger pool of professionals within the firm reduced the demand for interns but raised the likelihood of an enterprise contacting educational institutions. Enterprises were 21-25% less likely to contact educational institutions when able to innovate on all four fronts compared to non-innovators. We argue that contacting educational institutions when the share of professionals was rising was largely driven by firms’ desire to have targeted solutions to their firm-specific problems. Labour-related constraints were immaterial in the demand for interns but raised the likelihood of hiring new employees or contacting educational institutions.

In a nutshell, youth-centric enterprises were more likely to hire interns when large relative to small or when facing rising training costs for type-A workers but less likely to hire interns when their average employee is mismatched on a single skill relative to none. These enterprises were indifferent between hiring and not hiring interns on all other factors, including: sector, type-A worker’s occupation and educational attainment, and satisfaction with type-A and type-B workers’ education. All firms were more likely to hire interns when a typical type-A worker had tertiary education relative to less than TVET, or type-A worker was typically a professional or technician relative to managers, but less likely to hire interns when a typical employee was mismatched on 1 skill. These firms were also indifferent on not hiring or hiring interns across all other factors. It could be that the mismatched single skill was the most relevant to the successful on boarding of interns.

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# APPENDIX

Table 3: summary statistics

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| |  |  |  |  | | --- | --- | --- | --- | |  | Otherwise | Type A and B are strictly youth on average |  | |  | (N = 289) | (N = 204) | p-value | |
| |  |  |  |  | | --- | --- | --- | --- | | # of professionals as a ratio of current workers |  |  | 0.015 | | Mean (SD) | 0.12 (0.17) | 0.16 (0.23) |  | | Min, Max | 0.0, 0.8 | 0.0, 0.9 |  | | Average income for type-A worker as a ratio of type-B worker’s income |  |  | 0.018 | | Mean (SD) | 3.17 (1.88) | 2.75 (2.08) |  | | Min, Max | 0.7, 12.0 | 0.1, 16.7 |  | | Average age of type-A worker |  |  | <0.001 | | Mean (SD) | 41.74 (7.98) | 30.50 (4.24) |  | | Min, Max | 18.0, 62.0 | 18.0, 35.0 |  | | Average age of type-B worker |  |  | <0.001 | | Mean (SD) | 33.50 (8.39) | 27.95 (3.78) |  | | Min, Max | 20.0, 55.0 | 20.0, 35.0 |  | | Inverse hyperbolic sine of income ratio between type-A and type-B workers |  |  | 0.001 | | Mean (SD) | 1.75 (0.49) | 1.59 (0.51) |  | | Min, Max | 0.6, 3.2 | 0.1, 3.5 |  | | # of current workers |  |  | 0.609 | | Mean (SD) | 108.29 (236.35) | 119.36 (236.58) |  | | Min, Max | 5.0, 2347.0 | 5.0, 2500.0 |  | | Average number of employees in the year (2014) |  |  | 0.859 | | Mean (SD) | 107.56 (234.24) | 111.33 (228.86) |  | | Min, Max | 5.0, 2506.0 | 5.0, 2500.0 |  | | Average number of employees in the year (2015) |  |  | 0.727 | | Mean (SD) | 108.79 (235.20) | 116.28 (234.01) |  | | Min, Max | 5.0, 2459.0 | 5.0, 2500.0 |  | | Hired in the last 3 years |  |  | 0.657 | | Otherwise | 67 (23.3%) | 51 (25.0%) |  | | Type A or B worker hired | 221 (76.7%) | 153 (75.0%) |  | | Hiring mix |  |  | 0.421 | | Type A only hired | 36 (16.3%) | 31 (20.3%) |  | | Type B only hired | 65 (29.4%) | 37 (24.2%) |  | | Hired both type A and B workers | 120 (54.3%) | 85 (55.6%) |  | | Type A worker hired in the past 3 years |  |  | 0.553 | | Otherwise | 132 (45.8%) | 88 (43.1%) |  | | Yes | 156 (54.2%) | 116 (56.9%) |  | | Type B worker hired in the past 3 years |  |  | 0.342 | | Otherwise | 104 (36.0%) | 82 (40.2%) |  | | Yes | 185 (64.0%) | 122 (59.8%) |  | | Contacted educational institutions |  |  | 0.052 | | Otherwise | 143 (49.5%) | 119 (58.3%) |  | | Yes, for type-A or B workers | 146 (50.5%) | 85 (41.7%) |  | | Contacted educ centers for type-A workers |  |  | 0.191 | | Otherwise | 176 (60.9%) | 136 (66.7%) |  | | Yes | 113 (39.1%) | 68 (33.3%) |  | | Contact educ centers for type-B workers |  |  | 0.188 | | Otherwise | 218 (75.4%) | 143 (70.1%) |  | | Yes | 71 (24.6%) | 61 (29.9%) |  | | Schools contacted for interns |  |  | 0.955 | | Otherwise | 83 (56.8%) | 48 (56.5%) |  | | Yes, for intern A or B | 63 (43.2%) | 37 (43.5%) |  | | Contacted school for type-A interns |  |  | 0.622 | | Otherwise | 69 (61.1%) | 39 (57.4%) |  | | Yes | 44 (38.9%) | 29 (42.6%) |  | | Contacted school for type-B interns |  |  | 0.770 | | Otherwise | 46 (64.8%) | 41 (67.2%) |  | | Yes | 25 (35.2%) | 20 (32.8%) |  | | Firm size |  |  | 0.157 | | Small firm (5-19 workers) | 112 (38.8%) | 63 (30.9%) |  | | Medium (20-99) | 100 (34.6%) | 85 (41.7%) |  | | Large (>99) | 77 (26.6%) | 56 (27.5%) |  | | Two-sector dichotomy, excluding agric. and mining |  |  | 0.764 | | Manufacturing | 75 (26.0%) | 49 (24.7%) |  | | Services | 214 (74.0%) | 149 (75.3%) |  | | Type A worker occupation |  |  | <0.001 | | Managers | 131 (45.3%) | 47 (23.0%) |  | | Professionals | 117 (40.5%) | 94 (46.1%) |  | | Technicians & associate professionals | 41 (14.2%) | 63 (30.9%) |  | | Mismatched skills |  |  | 0.153 | | No mismatch | 105 (36.3%) | 89 (43.6%) |  | | One skill mismatched | 62 (21.5%) | 45 (22.1%) |  | | Two | 64 (22.1%) | 29 (14.2%) |  | | Three | 33 (11.4%) | 19 (9.3%) |  | | 4 to 11 skills mismatched | 25 (8.7%) | 22 (10.8%) |  | | Educ level for new type-A hire |  |  | 0.005 | | Primary or secondary, youth polytechnics | 37 (12.8%) | 10 (4.9%) |  | | Post secondary non-tertiary, TVETs | 82 (28.4%) | 75 (36.8%) |  | | Tertiary, university | 170 (58.8%) | 119 (58.3%) |  | | Educ level for new type-B hire | ] |  | 0.043 | | Primary or secondary, youth polytechnics | 118 (40.8%) | 61 (29.9%) |  | | Post secondary non-tertiary, TVETs | 113 (39.1%) | 97 (47.5%) |  | | Tertiary, university | 58 (20.1%) | 46 (22.5%) |  | | Educ level for worker type-A |  |  | 0.006 | | Primary or secondary, youth polytechnics | 36 (12.5%) | 11 (5.4%) |  | | Post secondary non-tertiary, TVETs | 62 (21.5%) | 62 (30.4%) |  | | Tertiary, university | 191 (66.1%) | 131 (64.2%) |  | | Educ level for worker type-B |  |  | 0.267 | | No educ, primary or secondary, youth polytechnics | 127 (43.9%) | 77 (37.7%) |  | | Post secondary non-tertiary, TVETs | 94 (32.5%) | 80 (39.2%) |  | | Tertiary, university | 68 (23.5%) | 47 (23.0%) |  | | Satisfactory type-A educ dummy |  |  | 0.027 | | Otherwise | 45 (15.6%) | 18 (8.8%) |  | | Worker type-A educ is satisfactory | 244 (84.4%) | 186 (91.2%) |  | | Satisfactory type-B educ dummy |  |  | 0.635 | | Otherwise | 50 (17.3%) | 32 (15.7%) |  | | Worker type-B educ is satisfactory | 239 (82.7%) | 172 (84.3%) |  | | Overall labor constraints |  |  | 0.001 | | No obstacle | 5 (1.7%) | 20 (9.8%) |  | | Minor | 126 (43.6%) | 81 (39.7%) |  | | Moderate | 126 (43.6%) | 82 (40.2%) |  | | Major or very severe | 32 (11.1%) | 21 (10.3%) |  | | Youth type A worker |  |  | <0.001 | | Otherwise | 236 (81.7%) | 0 (0.0%) |  | | Yes | 53 (18.3%) | 204 (100.0%) |  | | Youth type B worker |  |  | <0.001 | | Otherwise | 109 (37.7%) | 0 (0.0%) |  | | Yes | 180 (62.3%) | 204 (100.0%) |  | | # of innovation types in the last 3 years |  |  | <0.001 | | 0 | 36 (12.5%) | 19 (9.3%) |  | | 1 | 108 (37.5%) | 31 (15.2%) |  | | 2 | 63 (21.9%) | 33 (16.2%) |  | | 3 | 52 (18.1%) | 46 (22.5%) |  | | 4 | 29 (10.1%) | 75 (36.8%) |  | | New procedures introduced |  |  | <0.001 | | Otherwise | 136 (47.2%) | 59 (28.9%) |  | | Procedure/ process innovation | 152 (52.8%) | 145 (71.1%) |  | | New products introduced |  |  | <0.001 | | Otherwise | 152 (52.8%) | 65 (31.9%) |  | | Product innovation | 136 (47.2%) | 139 (68.1%) |  | | New management practices introduced |  |  | <0.001 | | Otherwise | 176 (60.9%) | 68 (33.3%) |  | | Management innovation | 113 (39.1%) | 136 (66.7%) |  | | New methods introduced |  |  | <0.001 | | Otherwise | 183 (63.5%) | 89 (43.6%) |  | | Methods innovation | 105 (36.5%) | 115 (56.4%) |  | | Type-A recruit from educ centers |  |  | 0.749 | | Otherwise | 242 (83.7%) | 173 (84.8%) |  | | Type-A recruited from schools | 47 (16.3%) | 31 (15.2%) |  | | Type-B recruit from educ centers | / |  | 0.033 | | Otherwise | 262 (90.7%) | 172 (84.3%) |  | | Type-B recruited from schools | 27 (9.3%) | 32 (15.7%) |  | |  |  |  |  | |

11 firms, with missing age for type-A or type-B workers, are excluded



Figure 4: Share of professionals

Table 4: Preferences for new hires, contacting schools, and interns

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| VARIABLES | Hire | Hire | Contact | contact | intern | intern |
|  | (1) | (2) | (3) | (4) | (5) | (6) |
| Workers-ss | -0.000113 |  | 0.000521 |  |  |  |
|  | (0.000489) |  | (0.000554) |  |  |  |
| Treat-ss | 0.162\*\*\* |  | -0.00428 |  |  |  |
|  | (0.0476) |  | (0.0511) |  |  |  |
| Treat-ss\*workers-ss | -3.33e-05 |  | -0.000585 |  |  |  |
|  | (0.000571) |  | (0.000634) |  |  |  |
| Firm size [# of workers] |  |  |  |  |  |  |
| Small [5-19] (rf) |  |  |  |  |  |  |
| Medium [20-99] | 0.0472 | -0.0572 | 0.0237 | 0.00101 | 0.0885 | 0.0759 |
|  | (0.0474) | (0.0689) | (0.0518) | (0.0771) | (0.0885) | (0.121) |
| Large [100+] | 0.0838 | 0.0314 | 0.227\*\* | 0.229\*\*\* | 0.168 | 0.262\*\* |
|  | (0.0784) | (0.0740) | (0.0897) | (0.0866) | (0.106) | (0.123) |
| Type-A worker occupation |  |  |  |  |  |  |
| Manager (rf) |  |  |  |  |  |  |
| Professional | 0.0961\* | 0.133\* | -0.00257 | 0.134 | 0.240\*\* | 0.109 |
|  | (0.0504) | (0.0746) | (0.0553) | (0.0838) | (0.0932) | (0.203) |
| Technician | 0.000911 | -0.0442 | 0.0394 | 0.223\*\*\* | 0.246\*\* | 0.106 |
|  | (0.0642) | (0.0858) | (0.0640) | (0.0858) | (0.116) | (0.209) |
| Sector |  |  |  |  |  |  |
| Services | -0.0183 | -0.0140 | 0.0198 | 0.0531 | -0.124 | -0.223 |
|  | (0.0519) | (0.0685) | (0.0560) | (0.0820) | (0.0985) | (0.136) |
| # of mismatched skills |  |  |  |  |  |  |
| 0 (rf) |  |  |  |  |  |  |
| 1 | 0.0992\*\* | 0.0601 | 0.105\* | 0.0264 | -0.194\*\* | -0.243\*\* |
|  | (0.0501) | (0.0620) | (0.0561) | (0.0829) | (0.0966) | (0.122) |
| 2 | 0.0498 | -0.0178 | 0.0487 | -0.0800 | -0.110 | -0.235 |
|  | (0.0581) | (0.0826) | (0.0669) | (0.0942) | (0.110) | (0.164) |
| 3 | 0.157\*\* | 0.109 | 0.123 | -0.0292 | -0.187 | -0.120 |
|  | (0.0616) | (0.111) | (0.0780) | (0.119) | (0.116) | (0.177) |
| 4 | -0.00212 | -0.137 | 0.202\*\* | 0.206\* | -0.0108 | -0.0407 |
|  | (0.0772) | (0.119) | (0.0903) | (0.113) | (0.118) | (0.159) |
| Educational attainment for new type-A worker |  |  |  |  |  |  |
| Less than TVET (rf) |  |  |  |  |  |  |
| TVET | -0.0371 | -0.0681 | 0.0484 | -0.0592 | 0.175 | 0.204 |
|  | (0.0697) | (0.0934) | (0.0806) | (0.117) | (0.139) | (0.212) |
| Tertiary (university) | 0.00753 | -0.124 | -0.0406 | -0.0880 | -0.0687 | -0.160 |
|  | (0.0597) | (0.0984) | (0.0731) | (0.113) | (0.130) | (0.207) |
| Educational attainment for new type-B worker |  |  |  |  |  |  |
| Less than TVET (rf) |  |  |  |  |  |  |
| TVET | -0.0357 | -0.101 | -0.0120 | -0.0983 | -0.0870 | -0.108 |
|  | (0.0463) | (0.0720) | (0.0567) | (0.0909) | (0.0892) | (0.163) |
| Tertiary (university) | -0.00237 | -0.0106 | 0.127\* | 0.0224 | -0.0302 | -0.105 |
|  | (0.0527) | (0.0728) | (0.0669) | (0.0975) | (0.0952) | (0.138) |
| Educational level for type-A worker |  |  |  |  |  |  |
| Less than TVET |  |  |  |  |  |  |
| TVET | -0.0130 | -0.107 | -0.139\* | -0.0428 | 0.209\* | 0.0384 |
|  | (0.0702) | (0.112) | (0.0812) | (0.116) | (0.124) | (0.166) |
| Tertiary (university) | -0.0163 | -0.0834 | 0.0199 | 0.0261 | 0.294\*\*\* | 0.271 |
|  | (0.0611) | (0.0985) | (0.0754) | (0.118) | (0.110) | (0.173) |
| Educational level for type-B worker |  |  |  |  |  |  |
| Less than TVET |  |  |  |  |  |  |
| TVET | -0.0210 | -0.0682 | -0.0548 | 0.0145 | 0.0136 | -0.0151 |
|  | (0.0483) | (0.0781) | (0.0592) | (0.0942) | (0.0919) | (0.130) |
| Tertiary (university) | -0.0176 | -0.0559 | 0.0509 | 0.119 | 0.0449 | 0.170 |
|  | (0.0516) | (0.0703) | (0.0659) | (0.104) | (0.0959) | (0.131) |
| Satisfactory type-A worker education | 0.0491 | 0.101 | -0.117\* | -0.238\*\* | -0.0135 | 0.113 |
|  | (0.0540) | (0.0898) | (0.0633) | (0.0940) | (0.102) | (0.155) |
| Satisfactory type-B worker education | -0.0366 | 0.00168 | 0.00598 | 0.0370 | -0.0341 | -0.178 |
|  | (0.0458) | (0.0661) | (0.0564) | (0.0792) | (0.0856) | (0.119) |
| Innovation varieties/ types |  |  |  |  |  |  |
| 0 (rf) |  |  |  |  |  |  |
| 1 | 0.0217 | -0.0204 | 0.0480 | -0.0400 | -0.111 | 0.00673 |
|  | (0.0637) | (0.0961) | (0.0761) | (0.111) | (0.107) | (0.154) |
| 2 | 0.0314 | 0.0254 | 0.0346 | 0.0522 | -0.0837 | 0.266 |
|  | (0.0656) | (0.109) | (0.0807) | (0.116) | (0.120) | (0.182) |
| 3 | -0.0332 | 0.0475 | -0.123 | -0.124 | -0.0469 | 0.104 |
|  | (0.0727) | (0.0881) | (0.0808) | (0.111) | (0.121) | (0.182) |
| 4 | -0.0912 | 0.0492 | -0.211\*\* | -0.252\*\* | -0.145 | -0.167 |
|  | (0.0810) | (0.0963) | (0.0862) | (0.119) | (0.156) | (0.206) |
| Severity of labour constraints |  |  |  |  |  |  |
| No obstacle (rf) |  |  |  |  |  |  |
| Minor | 0.200\* | 0.241\* | 0.112 | 0.0746 | 0.424\* | 0.213 |
|  | (0.120) | (0.133) | (0.110) | (0.135) | (0.229) | (0.317) |
| Moderate | 0.277\*\* | 0.302\*\* | 0.246\*\* | 0.233\* | 0.290 | 0.165 |
|  | (0.122) | (0.137) | (0.111) | (0.138) | (0.236) | (0.311) |
| Major or very severe | 0.308\*\* | 0.363\*\* | 0.323\*\*\* | 0.280\* | 0.431\* | 0.306 |
|  | (0.127) | (0.141) | (0.121) | (0.149) | (0.252) | (0.349) |
| Contact | -0.00847 | 0.0569 |  |  |  |  |
|  | (0.0435) | (0.0596) |  |  |  |  |
| Training costs for type-A worker | 0.00419 | -0.0143 | 0.0315\*\* | 0.0333\* | 0.00610 | 0.0467\*\* |
|  | (0.0129) | (0.0192) | (0.0147) | (0.0176) | (0.0201) | (0.0228) |
| wage\_0 | -0.000767 | -0.00917\* | -0.00656 | -0.00308 | -0.00545 | 0.00411 |
|  | (0.00501) | (0.00528) | (0.00811) | (0.0102) | (0.00552) | (0.00763) |
| Share of professionals | -0.211 | -0.473\*\*\* | 0.426\*\*\* | 0.429\*\*\* | 0.0520 | 0.356 |
|  | (0.133) | (0.147) | (0.131) | (0.164) | (0.220) | (0.293) |
| Average age for type-A worker (age-A) | -0.0449 | -0.320 | -0.0742 | -0.179 | -0.184 | 0.430 |
|  | (0.0634) | (0.582) | (0.0706) | (0.745) | (0.130) | (0.945) |
| Age-A sq. | 0.00108 | 0.00967 | 0.00158 | 0.00656 | 0.00574 | -0.0199 |
|  | (0.00172) | (0.0215) | (0.00187) | (0.0276) | (0.00350) | (0.0350) |
| Age-A cubed | -8.34e-06 | -9.31e-05 | -1.10e-05 | -8.31e-05 | -5.45e-05\* | 0.000290 |
|  | (1.48e-05) | (0.000259) | (1.59e-05) | (0.000333) | (3.01e-05) | (0.000425) |
| Workers-ssa |  | -0.000230 |  |  | 0.000237\*\* |  |
|  |  | (0.000176) |  |  | (9.89e-05) |  |
| Treat-ssa |  | 0.101\* |  |  | -0.0305 |  |
|  |  | (0.0601) |  |  | (0.0775) |  |
| Workers-ssy |  |  |  | 0.000113 |  | 0.000121 |
|  |  |  |  | (8.76e-05) |  | (0.000123) |
| Treat-ssy |  |  |  | 0.0491 |  | 0.0890 |
|  |  |  |  | (0.0643) |  | (0.113) |
| Constant | 1.035 | 4.040 | 1.367 | 2.054 | 1.653 | -2.870 |
|  | (0.786) | (5.176) | (0.856) | (6.537) | (1.577) | (8.367) |
| Observations | 484 | 250 | 485 | 250 | 227 | 118 |
| R-squared | 0.132 | 0.235 | 0.238 | 0.285 | 0.219 | 0.390 |

Running variable is the number of workers, and is centered at sector and size level (ss); sector, size, and dichotomous age level (ssa), and; sector and size level for youth-centric firms (ssy). Treatment (treat) is 1 for firms with centered number of workers either 0 or positive, and 0 otherwise. Odd columns refer to all sampled enterprises whereas even columns capture youth-centric sample. Parentheses report standard errors which are robust. \*\*\*, \*\*, and \*, respectively, indicate that the corresponding coefficient is statistically not zero at 0.01, 0.05, and 0.1 levels. Training costs were transformed using inverse hyperbolic sine function.

1. Author 1 and 2 are affiliated to the Economics Scholar Panel. Author 3 is at the Kenya School of Law. [↑](#footnote-ref-1)
2. Quality internships were characterized by a combination of elements focusing on skills development—e.g., skills’ tracking, project initiation and completion, inclusion on teams, clarity of learning outcomes, and engagement in ongoing work—and internship-related support in a structured manner (Williams et al, 2024). The latter entailed tracking engagement/ satisfaction, regular feedback, placement with a mentor or trained supervisor, centralized support, and formal onboarding. [↑](#footnote-ref-2)
3. All university students in the sample were not older than thirty years. In the polytechnic sample, 0.6% of the students considered were above thirty-years-old. Sampled students pursued economics (55%) or management (45%) at the university whereas polytechnic students pursued management information systems (34.8%) or entrepreneurial sciences (65.2%). [↑](#footnote-ref-3)
4. Countries considered were Turkey, Norway, Iceland, and all memberships to the European Union in 2010. [↑](#footnote-ref-4)
5. Poor structures for unpaid internships arise from less effort being invested by organizations in the design of unpaid internships. As a result, informal duties could be assigned to unpaid interns alongside other roles within the organization which are unclear. [↑](#footnote-ref-5)
6. These controls include university courses, and supervision and infrastructure, standardized per week work duration, field of study, father’s occupational position, age, and gender among other factors. [↑](#footnote-ref-6)
7. We include sector and size of the firm among the regressors. [↑](#footnote-ref-7)
8. In the STEP dataset, the number of new employees is not given. H then is an indicator variable for the employment of blue-collar (type-B) or white-collar (type-A) workers in a three-year window. [↑](#footnote-ref-8)
9. Sector and size are not interacted since some observations are missing—in particular, small firms within manufacturing did not contact educational institutions for interns. [↑](#footnote-ref-9)
10. An alternative specification entails type-A worker occupation, which is one of three categories—managers, professionals, and associate professionals and technicians. [↑](#footnote-ref-10)
11. Within-firm innovations are either managerial, methods, procedures/ process, or product innovation. We consider the number of innovation varieties undertaken. [↑](#footnote-ref-11)
12. These challenges are employment protection legislation, labour availability, general education of workers, technical/ vocational training of workers, finding workers with prior experience, high turnover, payroll taxes and social security contribution, and overall wage level. [↑](#footnote-ref-12)
13. Peter Doyle indicates that the two are expected to differ with respect to motive and behavior. [↑](#footnote-ref-13)
14. Peter Doyle pinpoints big falls in labor demand during economic turmoil, e.g., Covid-19 pandemic. It is then natural to anticipate furloughing rather than the employment of interns during crises. Firms tend to hire experienced workers during economic turmoil as opposed to younger workers (Forsythe, 2022). [↑](#footnote-ref-14)