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Training Returns Among Informal Workers: Evidence from Urban Sites in Kenya and Tanzania

Nina Torm¹ 

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Abstract

Training contributes to economic growth through raising productivity, enabling the use of new technologies and allowing workers to raise earnings through widening their skills base. This paper uses mixed methods to examine individual returns to off-the-job training, on-the-job training and informal training focussing on informal workers in the sectors of construction, micro-trade and transport in urban areas of Kenya and Tanzania. Based on a cross-section, the analysis shows that earnings are 21 pct. higher for workers with off-the-job training compared to being self-taught, whilst the premium for on-the-job or informal training by a family member is 16 pct. The qualitative data provide further insights into the reasons for variations in gains across the different types of training and illuminates the role of informal worker associations in facilitating training access. Formal training should be made affordable and tailored to worker needs so that it becomes a worthwhile investment for informal workers.

Keywords Earnings · Human capital · Informal workers · Kenya · Tanzania · Training

Résumé

Rendements de la formation des les travailleurs informels : Preuves provenant de sites urbains au Kenya et en Tanzanie La formation contribue à la croissance économique en augmentant la productivité, en favorisant l'utilisation de nouvelles technologies et en permettant aux travailleurs d'augmenter leurs revenus en élargissant leur base de compétences. Ce document utilise des méthodes mixtes pour examiner les rendements individuels de la formation hors du travail, la formation sur le travail, et la formation informelle, en se concentrant sur les travailleurs informels dans les secteurs de la construction, du micro-commerce et du transport dans les zones urbaines du Kenya et de la Tanzanie. Sur la base d'une section transversale, l'analyse montre que les revenus sont 21 pourcent plus élevés pour les travailleurs ayant suivi une forma-

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tion hors du travail par rapport à ceux qui sont autodidactes, tandis que la prime pour la formation sur le travail ou la formation informelle par un membre de la famille est de 16 pourcent. Les données qualitatives fournissent des approfondissements sur les raisons des variations de gains à travers les différents types de formation, et éclairent le rôle des associations de travailleurs informels dans la facilitation de l'accès à la formation. La formation formelle devrait être rendue abordable et adaptée aux besoins des travailleurs afin qu'elle devienne un investissement valable pour les travailleurs informels.

Introduction

Human capital development, including both education and post-school training, has been a central part of the development strategies of most countries contributing to economic growth through raising productivity and facilitating the use of new technologies. Moreover, post-school/vocational training is often categorized as a type of promotive social protection allowing workers to raise their earnings through extending their skills base. Especially in countries where the educational system is sub-optimal, there is an increased efficacy of alternative ways of upgrading worker skills outside general academic education. However, in many countries the national training systems have traditionally been little concerned with the informal economy (IE)¹ and existing literature focuses almost exclusively on training returns among formal workers, mostly in high-income countries (Jona-Lasinio and Venturini 2023; Haelermans and Borghans 2012). However, given that in many developing countries, workers often make a living in the IE, it is imperative to understand how training may benefit and protect this segment of the workforce. Among recent developing country studies most look exclusively at formal workers and/or formal training outcomes (Alfonsi et al. 2020; Bjerge et al. 2021; Hansen et al. 2022), yet, given the amount of informal learning that takes place, especially in informal work contexts, it is important to also consider training that goes beyond the formal. Against this background, the main contributions of this paper are threefold: (i) capturing the returns to training among informal workers, (ii) disaggregating training into three main categories and (iii) providing insights into the role of worker associations in facilitating and/or providing access to training. In line with the literature *off-the-job training* is defined as whether the worker has attended a professional training school or a training course by an association/institution, *on-the-job training* is defined as a formal apprenticeship or training in the current or in another job, and *informal training* is defined as having learnt from a family member, which is separate from being self-taught.

The paper uses quantitative methods to examine the earnings return to off-the-job-, on-the-job and informal training for workers operating in the sectors of construction, micro-trade and transport in urban areas of Kenya and Tanzania. Based on

¹ I use the ILO definition of the IE (see appendix for more detail). Dell'Anno (2021) provides a thorough review of theories and definitions of the IE.



cross-sectional data, the analysis shows that workers who have undertaken training at a professional school or institution/association have earnings that are around 21 pct. higher than workers who are self-taught. Moreover, receiving on-the-job training or informal training by a family member is associated with an earnings premium of around 16 pct. as compared to being self-taught. The data further reveal variation by location, sector and worker-type in terms of the gains associated with the different training types. Furthermore, qualitative insights from key informant interviews (KII) and focus group discussions (FGD) reveal certain barriers to training take-up and the role of associations in facilitating training.

The paper is structured as follows. First, the literature review positions the paper among existing studies. The second section describes the data and methodology including the empirical strategy. The third section presents the quantitative results including insights into gender, location, sector and worker-type variations, followed by a section on the qualitative findings. Finally, the paper discusses the findings and concludes.

Literature

Training provision is often sub-optimal and in the case of training on-the-job reasons for underinvestment include credit market imperfections, high worker turnover and time- and resource-costs for the employer, as well as a low expected return on training investment especially among smaller enterprises (SMEs), which account for a large share of employment in developing countries (Almeida and Aterido 2015). From the workers' perspective, time, cost and/or imperfect knowledge regarding the return to different skills may prevent or dissuade them from investing in skills (Jensen 2010) and even if the fees are paid by the employer, participating in training courses takes time away from the job, and workers may not reap the benefits immediately. Such reluctance to invest in training—both from the employer and the worker side—is revealed in empirical studies. In terms of training outcomes, evidence from high-income countries generally shows that training results in workers receiving higher wages.² For developing countries, the results are more limited and mixed, compared to high-income countries. Whilst some studies show that, workplace training results in workers receiving higher wages (Bjerge et al. 2021; Hansen et al. 2022) other studies find limited impacts (Ng 2005; Xiao 2002; Yamauchi et al. 2009). Distinguishing by gender Bjerge et al. (2021) find that in Vietnam firm-sponsored training in small, and medium enterprises (SMEs) is associated with higher wages for trained women as compared to both untrained women and men implying that on-the-job training could help to increase women's labour productivity in turn contributing to closing the gender wage gap. In Myanmar, Hansen et al. (2022) also find that among micro, small, and medium enterprises (MSMEs) the wage returns to training are particularly high for women (and among the least educated workers) and that training is largely firm-specific since prior training or certified training do not

² See for instance the meta-study by Haelermans and Borghans (2012).



contribute to higher wages. By contrast, in Malaysia, Almeida and Faria (2014) find higher on-the-job training returns for males compared to females. Evidence from Sub-Saharan Africa (SSA) is generally favourable towards training. For instance, in the case of workplace training among formal enterprises in Kenya and Zambia, Rosholm et al. (2007) find a positive average wage effect especially for longer training spells and larger firms. Kahyarara and Teal (2008) reach a similar conclusion in Tanzania and find that even among small firms there are substantial returns to current training and attending a short training course. Moreover, they find that vocational training returns may exceed that of lower levels of schooling. In Ghana, Görg et al. (2007) show that workers with on-the-job training have higher earnings (mainly in firms with a high degree of foreign ownership). Comparing the effectiveness of (subsidized) vocational and on-the-job training in an experiment for unemployed youth in Uganda, Alfonsi et al. (2020) find that the former group sees steadily increasing earnings whilst the latter group do well initially, but then over time, their earnings fall behind those of formally trained workers due to the enhanced skills transfer associated with this kind of training.

In addition to methodological and sample differences between studies, the fact that training studies from developing countries show more mixed outcomes could be an indication that factors like the underlying labour market structures, the system of qualifications, or workplace relations also play a role. In terms of labour market structures many developing countries are characterized by a large IE (and a much smaller formal sector) and substantial occupational mismatch. In contexts where the IE provides a key livelihood source, informal training may play a particular important role although concrete evidence of this remains scarce. Exceptions include Blaak et al. (2013) who highlight the importance of informal training for students and workers in Uganda showing that it can improve their capability and make them self-reliant without discontinuing their primary source of livelihood—unlike formal training which requires time away from work. Likewise in the case of India Singh (2001) highlights that much of the training for IE workers happens through on-the-job training or by being an apprentice or helper to the skilled workers. The author suggests that reasons include a lack and/or higher time and monetary cost of formal training options for informal workers, meaning that hereditary/self-learning and on-the-job training is preferred as there is no loss of earnings, when the training takes place through these channels. Whilst many studies, including from SSA examine SMEs this paper focusses solely on informal workers across different sectors and locations. In zooming-in on informal workers, the paper contributes to existing literature which mostly looks at training returns among formal workers. Additionally, this paper disaggregates training into three main categories compared to most papers which are restricted to one or two aggregated types of training. Given the presumed importance of informal learning at work, using highly aggregated descriptions of ‘training’ misses important differences in the determinants and outcomes associated with different types of training (Blundell et al. 1996). A recent exception is Bahl et al. (2021) who separate training into three components and show that in India workers with formal training earn higher wages than workers with no or informal training and that there is no difference in earnings between workers with informal training and none. In their case informal training is availed through



hereditary vocations, on-the-job-training or through unpaid jobs (helpers) in the IE so the authors do not separate the effects of these components, although there might be a substantial difference between family training, being self-taught and on-the-job learning.

In accounting for such differentiation, this paper contributes to the limited literature on training among informal workers by adding another level of disaggregation distinguishing between off-the-job, on-the-job training, and informal training. Aside from the empirical weight of informal training, the theoretical reasoning behind including this dimension is that leaving informal training out of the wage equation may lead to biased results (Nordman and Hayward 2006). For instance, if high-wage workers have higher abilities than low-wage workers to learn by themselves, or to imitate other workers perform their tasks neglecting informal training is likely to yield an upward-biased estimate of the return to off-the-job or on-the-job training for better educated workers (Fialho et al. 2019). Before un-covering such relations in the case of Kenya and Tanzania, the next section presents the data and method used in the analysis.

Data and Method

The article is based on survey and interview data with informal workers carried out during 2018–19 in Kenya and Tanzania as part of a larger collaborative project (Riisgaard 2021).³ The data was collected for workers engaged in construction, micro-trade, and transport—sectors that are highly prone to informality and have a high concentration of workers in urban areas. The data was sampled from two urban centres in each country: Nairobi and Kisumu (Kenya), and Dar-es-Salaam and Dodoma (Tanzania). The sample of construction workers include both skilled and unskilled workers employed directly by construction/site managers or indirectly via an intermediary working on large and medium construction/building sites, waiting sites e.g. streets, buildings, but excluding individual residential housing sites. A mix of different types of construction workers are represented including masons, welders, carpenters, steel fixers and electricians. Transport workers consists of boda-boda (motorcycle riders) and daladala/matatu (minibuses) drivers and conductors. Traders include those operating on the street, in bus terminals, vacant lots etc., as well as less mobile ones like mama-lishe, however those with permanent structures such as kiosks or regular designated markets are excluded.

The survey covered wageworkers, own-account workers, and micro-businesses with a maximum of two employees, but no micro-business employees were part of the sample, only owners. The total sample (random and purpose-based) consisted of 1462 workers, which after data cleaning led to a final sample of 1385 observations (644 in Kenya and 741 in Tanzania).⁴ Seventy-five pct. of workers were

³ For more information on the Informal Worker Organisation and Social Protection project visit: <https://ruc.dk/research-project/informal-worker-organisation-and-social-protection>

⁴ See appendix for further detail on the sampling strategy including definitions of the different worker types.



sampled randomly, and twenty-five pct. were sampled through associations identified purposively for the project to ensure a broad representation of different types of associations. KIIs with the chairperson of different associations—both individual and umbrella type associations and FGDs with different association members representing all three sectors formed the basis of the qualitative data which was analysed using Nvivo.⁵ The qualitative data supplement the survey findings and help to explain what led workers to undertake training whilst providing insight into the location and sector variations revealed by the regressions results. It also strengthens the paper by providing detail on specific training topics, how exactly the workers benefited and who facilitated the training including the role played by worker associations.

Descriptive Characteristics

Table 1 provides the summary statistics for the full set of workers and split by country to reveal any differences between Kenya and Tanzania along the various dimensions. Starting with earnings, the table shows that the average is just under 11 USD per day, and slightly higher in Kenya, with much larger variation in Tanzania. As for training, 22 pct. of workers have undergone off-the-job training, and this is slightly higher in Kenya at 27 pct. Within this measure the vast majority have gone to a professional training school, again more so in Kenya which also has a slightly higher share of workers that have trained at an association. On-the-job training which comprises formal apprenticeships and/or training in the current and/or previous job accounts for 25 pct. and close to double in Kenya compared with Tanzania. In reverse of the latter, the incidence of informal training is almost three times higher in Tanzania compared with Kenya and 15 pct. overall, and finally the share of workers that are self-taught is also substantially higher in Tanzania compared with Kenya and 38 pct. overall. Thus, in general informal workers in Kenya do more formal training (both off-the-job and on-the-job training) whereas in Tanzania the training is of a more informal nature. The relatively high incidence of informal training in Tanzania could be related to concerns with (off-the-job) training costs and post-training job security as expressed by a group of informal transport workers:

We are unemployed, the driving course fee is 200,000 [TZS] (app. USD 86) how can I afford such a training cost? Our jobs are undefined, since we don't have contracts. You have instructed us to attend a training, how will I secure my job during the period of training? After training, will I be back to my former job? And will I be given a new contract? (FGD, Dar-es-Salaam 2020)

In this case, the workers are referring to their associations having instructed them to attend training as a result of the Tanzanian government's decision (in 2015) that

⁵ See AuthorA (2021) for further detail on qualitative data collection.



Table 1 Summary statistics

	All		Kenya		Tanzania	
	Av	SD	Av	SD	Av	SD
Mean wage USD	10.688	14.370	10.964	9.379	10.449	17.597
Off-the-job training	0.224	0.417	0.273	0.446	0.181	0.385
School	0.191	0.393	0.231	0.422	0.155	0.362
Association	0.033	0.179	0.042	0.201	0.026	0.158
On-the-job training	0.245	0.431	0.318	0.466	0.182	0.386
Informal training	0.151	0.358	0.075	0.263	0.217	0.413
Self-training	0.380	0.486	0.334	0.472	0.420	0.494
Post sec. education (yes = 1)	0.108	0.310	0.141	0.349	0.078	0.269
Male (yes = 1)	0.773	0.419	0.767	0.423	0.779	0.415
Association member (yes = 1)*	0.414	0.493	0.484	0.500	0.345	0.476
Age—no. of years	35	9.890	36	9.804	34	9.895
Married (yes = 1)	0.664	0.472	0.758	0.429	0.583	0.493
Assets (yes = 1)	0.355	0.479	0.267	0.443	0.430	0.495
Local(yes = 1)	0.371	0.483	0.264	0.441	0.464	0.499
Chance to hold job next month	0.791	0.407	0.801	0.399	0.783	0.413
Money reasons for job choice	0.308	0.462	0.318	0.466	0.300	0.458
Education/training/passion	0.215	0.411	0.112	0.315	0.305	0.461
Tie strong (yes = 1)	0.116	0.320	0.123	0.328	0.109	0.312
Tie weak (yes = 1)	0.346	0.476	0.348	0.477	0.344	0.475
Micro-business (yes = 1)	0.109	0.312	0.075	0.263	0.139	0.346
Wageworker (yes = 1)	0.371	0.483	0.548	0.498	0.217	0.413
Own-account (yes = 1)	0.519	0.500	0.377	0.485	0.642	0.480
Construction (yes = 1)	0.308	0.462	0.343	0.475	0.277	0.448
Transport (yes = 1)	0.325	0.469	0.311	0.463	0.337	0.473
Trade (yes = 1)	0.368	0.482	0.346	0.476	0.386	0.487
Nairobi (yes = 1)	0.264	0.441	0.567	0.496	0.000	0.000
Kisumu (yes = 1)	0.201	0.401	0.433	0.496	0.000	0.000
Dar (yes = 1)	0.235	0.424	0.000	0.000	0.440	0.497
Dodoma (yes = 1)	0.300	0.458	0.000	0.000	0.560	0.497
Observations	1385		644		741	

*This is based on the random sample of 979 workers (see appendix)

Source: Author's elaboration based on SPIWORK data. Note: Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

all drivers should get back to school.⁶ In response to this decision several transportation association leaders wrote a letter to the Ministry of Works, Transport and

⁶ The Vocational Education Training (VETA) and the National Institute of Transportation (NIT) are the main training institutions in the Tanzanian transport sector.



Communication, enquiring about job contracts, job security, lack of salaries and the requirement to attend training. Although many workers believe that the government should provide certified training, such concerns mean that on-the-job and/or informal training seem to be the most feasible options for many informal workers in Tanzania.

Regarding specific training topics, among micro-traders in Kenya workers mentioned receiving training on leadership, lobbying and advocacy and technology application in business as well as the importance of financial training. For instance, one group of workers noted that they had undergone training by KCB (Kenya Commercial Bank Limited) when they requested a loan:

As a group we have a teacher at KCB bank to train us, including investment seminars and they give us new products. We learn about different products, we got different banks to interact with. We carry new ideas with us (FGD, Kisumu 2018).

In Tanzania, micro-traders mentioned training courses on practical skills such as tailoring, and how to produce various items for sale like soap making, spices and food items:

...for example tomorrow on 29th there's a seminar. We will do it as Uwamata⁷ and will give trainings to entrepreneurs for those who will be willing. We will train on how to make handbags, peanuts and soaps making. (KII, Dar-es-Salaam 2019).

Other common training areas include sales and marketing and entrepreneurship training covering topics like prices, markets, and raw materials, as well as skills related to business management such as how to handle a loan. Several workers talked about the importance of receiving both practical and theoretical training, combined with appropriate capital input, to succeed as a business.

Construction training subjects include building and construction, masonry, painting, steel works, electrical installation, roofing, carpentry, welding, interior and exterior housing finishing as well as safety issues. Discussions with workers revealed that often electricians and plumbing courses are done in training institutions, while other trades like building and construction, masonry and carpentry are largely learnt on-the-job and through apprenticeships. Moreover, training often comes as an addition to post-secondary education with construction workers generally being well-educated, despite beliefs to the contrary:

“...usually, this is the first job that any student from the University of Nairobi will venture into before getting a job. We get many people from the university. They are not in the sector but that is the first job they secure. For myself, I have an upper hand which has to do with the training that I received as a plumber.

⁷ UWAMATA stands for “Umoja wa Machinga Tanzania” which is an association of Machinga (hawkers) in Tanzania.



Within the construction sector, many people have been said to be less educated and this is not the case (Chama Cha Mafundi Organizer, 2019 Nairobi).

This path from the university to the informal construction sector may be related to a lack of curriculum on becoming *fundis as* pointed out by the chairman of a large association (Funditech). This specific association is working with the Technical and Vocational Education and Training Authority (TVETA) on developing a training module that does not require workers to take time off work and hence forego earnings. Despite such examples of highly educated workers finding employment in the IE, around 11 pct. of workers in the sample (across the sectors), have a post-secondary education, and although the incidence is higher in Kenya than in Tanzania most workers have a relatively low level of education although with some variation within sectors. In the Tanzanian transport sector, for instance, some boda-boda (motorcycle) drivers have finished secondary school whilst others express having inadequate basic education to follow training:

You know it's difficult for us sometimes to go to such schools, because we are not educated, and then they start teaching you things that are not easy to understand, why don't they only teach us how to drive? Alright, they teach a little bit of driving towards the end, thus we pick up the real knowledge of riding from our colleagues. (FGD, Dar-es-Salaam, 2020)

Apart from motor vehicle driving transport sector training subjects include motor vehicle mechanics, road safety training and customer care training for passengers.

Table 1 reveals that most of the workers sampled are male (77 pct.) which means that along the gender dimension the sample is not representative of the IE as in both Kenya and Tanzania women account for most IE workers (ILO 2018),⁸ however the sectors of construction and transport are male dominated in both countries.⁹ Figures on the gender dimension of training (not reported) reveal that, on average, men are significantly more likely to undergo off-the-job training done by a professional school, yet women are more likely to participate in training done by an association/institution. Men have a significantly higher representation amongst those trained on-the-job whilst women are marginally more likely to have done informal training or to be self-taught.

Additional control variables include association membership,¹⁰ worker age, legal status, assets, post-secondary degree, worker types, sector, location, job motivation

⁸ In low-income countries, 92.1 pct. of employed women are in informal employment compared to 87.5 pct. of men. In lower-middle income countries, 84.5 pct. of women are in informal employment compared to 83.4 pct. of men (ILO 2018).

⁹ Since the actual population of informal workers is unknown drawing a representative sample is not possible.

¹⁰ As for the breakdown of association types out of the 800 members the largest group (51.1 pct.) belong to a SACCO or a Village Community Banks (VICOBA) the latter being more informal compared with the former which is more established. Another 20.4 pct. belong to a smaller less established worker association, 10 pct. to a trade specific organization, 6.1 pct. to a business association, 5.1 pct. of members are part of a group with work colleagues/gang, 2.8 pct. belong to a women's organization, 2 pct. to a trade union, 1.8 pct. to a youth union whilst the remaining 0.3 pct respond others.



and route into occupation. These variables are all included in the analysis to account for key worker characteristics and the potential selection of workers into their occupation for reasons related to the outcome variable (earnings) or the main variable of interest (training) to minimize the endogeneity bias when examining the association between training and earnings.

Empirical Strategy

To examine the training related earnings premium, I follow a standard Mincer earnings function (Mincer 1974) where individual wages depend on various worker attributes education, in line with the literature. Building on the model of (Troske 1999), the specification takes the following form:

$$wi = \alpha + \beta Ti^{off} + \gamma Ti^{on} + \delta Ti^{inf} + \partial Xi + \varphi Li + \epsilon i \quad (1)$$

where the dependent variable (wi) is the log of real monthly mean earnings (in USD) of worker i . The main variables of interest are i) off-the-job training (βTi^{off}) ii) on-the-job training (γTi^{on}) and iii) informal training (δTi^{inf}). In the analysis, I also consider different types of off-the-job training (professional school and institution/association). ∂Xi is a vector of worker i 's characteristics and location dummies are denoted by φLi . Finally, ϵi is a random error term. In terms of worker characteristics these include (in alphabetical order) assets, association membership, education, gender, job motivation, marital status, route to current job, sector, worker age (including squared) and worker-type, as described in the summary statistics. Experience, proxied by worker age, has been found to influence the effects of training on earnings (Yamauchi et al. 2009), and the education variable is an indicator variable for post-secondary education since this accounts for a large share of the variation in earnings (Mincer 1974; Spence 1973). Moreover, it seems very likely that the more able (educated individuals) will benefit relatively more from training so any increment in earnings may confound training with ability if education is unaccounted for. Positive returns to training may also be related to higher motivation or stronger loyalty on behalf of workers after having undergone training (De Grip and Sauermann 2013), thus by controlling for whether training and/or money is a motivating factor when choosing the specific job, the analysis factors in both individual abilities and incentives which could influence earnings. The large number of individual control variables to some extent make up for the fact that the cross-section does not allow for worker fixed effects to address bias from time-invariant individual unobservable factors. Beyond what has already been described workplace information which may affect both earnings and the uptake of training is not available for wageworkers yet given that most workers are own-account or micro-businesses, this is unlikely to generate substantial bias. However, in the absence of an appropriate instrument that would allow for IV analysis, the possibility that some bias arising from for instance more able workers selecting into training cannot be excluded and thus the findings are not necessarily causal. Nevertheless, evidence from the previous sections suggests that workers of different levels of ability do undergo training,



Table 2 Training returns

	(1)	(2)	(3)
Off-the-job training	0.246*** (0.071)	0.223*** (0.074)	
On-the-job training	0.207*** (0.062)	0.158** (0.064)	0.157** (0.064)
Informal training	0.198*** (0.072)	0.158** (0.071)	0.158** (0.071)
Post sec. education	0.303*** (0.075)	0.259*** (0.075)	0.263*** (0.074)
Male	0.440*** (0.066)	0.339*** (0.074)	0.342*** (0.074)
Member	0.137*** (0.046)	0.106** (0.046)	0.107** (0.046)
Age	0.064*** (0.015)	0.049*** (0.014)	0.049*** (0.014)
Age squared	- 0.080*** (0.019)	- 0.064*** (0.018)	- 0.064*** (0.018)
Married	0.003 (0.056)	0.004 (0.055)	0.003 (0.055)
Assets	0.113** (0.051)	0.101** (0.051)	0.101** (0.050)
Dodoma	- 0.377*** (0.065)	- 0.463*** (0.076)	- 0.463*** (0.075)
Kisumu	- 0.104* (0.062)	- 0.040 (0.062)	- 0.039 (0.062)
Dar	- 0.233*** (0.064)	- 0.330*** (0.067)	- 0.328*** (0.067)
Local		- 0.112** (0.053)	- 0.112** (0.052)
Chance		0.015 (0.054)	0.015 (0.054)
Money		0.137*** (0.052)	0.138*** (0.052)
Education/training/passion		0.003 (0.063)	0.002 (0.063)
Tie strong		0.136* (0.073)	0.136* (0.073)
Tie weak		0.052 (0.055)	0.052 (0.054)
Micro-business		0.215** (0.084)	0.216** (0.084)
Wageworker		- 0.422*** (0.060)	- 0.421*** (0.060)
Construction		0.408***	0.409***



Table 2 (continued)

	(1)	(2)	(3)
		(0.078)	(0.077)
Transport		0.291***	0.295***
		(0.072)	(0.071)
Training school			0.208***
			(0.070)
Training association			0.298
			(0.188)
r2	0.14	0.20	0.20
N	1385	1385	1385

Source: Author's elaboration based on SPIWORK data. Note: Standard errors in parentheses *p < 0.10, **p < 0.05, ***p < 0.01

which in combination with the relatively low incidence of higher education implies that selection bias based on ability is likely not to be a major concern.

Results

Earning Returns to Training

This section presents the quantitative results followed by a sub-section which draws on qualitative insights to provide further insights to the findings. Table 2 presents the OLS results of Eq. (1) where column (1) contains the three training types with a minimum set of controls including key worker characteristics (gender, age, assets, marital status, association membership and education) and location, column (2) adds an expanded set of controls that might influence training participation and earnings outcome such as reasons for job choice, contacts in the workplace, worker type, sector and whether the worker is born locally and finally column (3) splits off-the-job training into professional training school and training course by an association or an institution.¹¹ In column (1) all three types of training are highly significant compared to being self-taught, and even though the coefficient sizes reduce somewhat with the addition of extra control variables in column (2) the earnings returns remains solid and highly significant. Off-the-job training has the highest return to training at 22 pct. higher than a worker who is self-taught, and for on-the-job training and informal training the premium is just under 16 pct.¹² The results are in line with

¹¹ The raw correlation between off-the-job training and earnings (not reported) shows that trained workers have earnings that are 34 pct. higher than workers without formal training, which is in line with Bahl et al. (2021).

¹² When on-the-job training is split into current job and previous job, it is revealed that the latter is driving the results, which aligns with a relatively higher share of workers reporting having trained in another job. This differs to Hansen et al. (2022) who find that prior training (in other firms) or certified training do not contribute to higher wages, indicating that training is largely firm-specific in this case (Myanmar).



other SSA studies e.g. Rosholm et al. (2007) who find non-formal training returns of around 20 pct. in formal enterprises in Kenya and Zambia, and Alfonsi et al. (2020) who show off-the-job training returns to be 22 pct. in Uganda. However, the earnings estimate is higher compared with studies looking at training among East Asian SMEs (Hansen et al. 2022; Bjerger et al. 2021; Lee et al. 2019) likely due to firm-level factors being accounted for in these cases.¹³ These regional divergences may also partly be a result of differences in educational systems. In column (3) off-the-job training is broken into its two sub-components and the results show that it is professional training schools, which also constitute the largest category (Table 1), that is driving the results.

The results point to the importance of distinguishing between different types of training, as also discussed in Fialho et al. (2019), and reveals that in both Kenya and Tanzania informal training returns can be substantial. In the remaining part of the analysis, I follow the specification in column 3. The control variables are all as expected¹⁴ and there is a substantial gender earnings gap of 34 pct. yet a direct comparison with existing literature is difficult since few studies look at the gender wage gap among informal workers. However, evidence from a recent OECD/ILO (2019) report shows that women in informal employment generally face a double penalty: on average, informal wage workers are paid less than formal workers, and women are paid less than men, so gender wage gaps are also likely to be larger in the informal economy. Interestingly when splitting the sample along the gender dimension (results not reported) it is revealed that off-the-job training returns are substantially higher for women than for men, in fact almost double for professional training schools at 33 pct. versus 18 pct. and 71 pct. versus 9 pct. for training at an institution/association, yet both estimates are less significant as the share of females in the sample is only 23 pct. On-the-job training returns are also higher for women at 23 pct. (though insignificant due to the relatively low number of observations) compared with 16 pct. for men, whilst informal training gives the same return to women and men. Across both countries, men have a higher education level and are more likely to attend both on and off-the job training, whilst women are generally self-taught or have learned through family members. Given that women who do attend training have earnings returns that are substantially above those who do not, and that the returns are substantially higher than for men, enhancing women's access to training could help to reduce the gender wage gap in line with other studies (Bjerger et al. 2021; Hansen et al. 2022).

Table 3 presents the results split by country, revealing significant differences. In Tanzania, all training forms are associated with significant earning returns, especially off-the-job training. For the small share of workers trained by an institution/association earnings are as much as 87 pct. higher than for those who are self-taught.

¹³ Since the current article focuses on own-account, micro-businesses, and waged workers in small firms, the absence of firm fixed effects likely does not make much difference.

¹⁴ For instance, compared with traders, workers in construction and transport have earnings that are around 40 pct. and 30 pct. higher respectively, and Tanzanian workers earn significantly below their Kenyan counterparts.



Table 3 Training returns by country

	(1) Tanzania	(2) Kenya
Training school	0.238** (0.111)	0.143* (0.084)
Training association	0.865** (0.343)	- 0.062 (0.187)
On-the-job training	0.183* (0.104)	0.091 (0.077)
Informal training	0.142* (0.083)	0.218 (0.142)
Male	0.423*** (0.119)	0.210** (0.093)
Member	0.051 (0.068)	0.236*** (0.062)
Age	0.090*** (0.018)	- 0.004 (0.019)
Age squared	- 0.124*** (0.023)	0.008 (0.023)
Married	0.045 (0.073)	- 0.026 (0.087)
Assets	0.074 (0.074)	0.146** (0.068)
Local	- 0.198*** (0.075)	- 0.005 (0.070)
Post sec. education	0.333** (0.139)	0.214*** (0.079)
Chance	0.069 (0.078)	- 0.063 (0.074)
Money	0.041 (0.079)	0.176*** (0.063)
Education/training/passion	- 0.096 (0.082)	0.222** (0.091)
Tie strong	- 0.025 (0.113)	0.240*** (0.092)
Tie weak	- 0.080 (0.078)	0.165** (0.068)
Micro-business	0.108 (0.105)	0.438*** (0.126)
Wageworker	- 0.255*** (0.083)	- 0.479*** (0.083)
Construction	0.544*** (0.119)	0.373*** (0.097)
Transport	0.301*** (0.103)	0.315*** (0.098)



Table 3 (continued)

	(1) Tanzania	(2) Kenya
Dodoma	- 0.114 (0.073)	
Kisumu		- 0.067 (0.060)
r2	0.23	0.20
N	741	644

Source: Author’s elaboration based on SPIWORK data. Note: Standard errors in parentheses *p < 0.10, **p < 0.05, ***p < 0.01

By contrast, Kenyan workers that have trained in an institution/association do not have any earnings gain as compared to being self-taught; only workers who attended professional training schools realize 14 pct. higher earnings, whilst in Tanzania the equivalent wage-gain is 24 pct. Given the substantial returns to training in Tanzania and the fact that our data reveals a gender gap that is almost double compared with Kenya, women workers in Tanzania may realize particularly high financial gains from participating in both off- or on-the-job training.

In sum, across training types, earning returns to training are much higher in Tanzania compared with Kenya. There is of course variation between sectors and the difference could also be related to Tanzania having several national policies linked to improving conditions in the IE, not least for female traders.¹⁵ Examples of direct interventions made by the Tanzanian government in the IE include formalization of training, information provision, and the allocation, construction, and management of workspace; simplification of policies; and enforcement of regulations. In Kenya, factors like association membership, contacts and job motivation appear to be more important determinants than training when it comes to earnings. However, we also know that association members are more likely to have attended off-the-job training (Riisgaard, 2021), so the linkage is there indirectly.

Table 4 presents the results split by sectors. Compared with both the trade and transport sectors, training among construction workers is associated with more significant and relatively high earning returns, especially for off-the-job training but also for on-the-job training, at around 40 pct. for the former (at a school) and 25 pct. for the latter. In Kenya, the qualitative evidence suggests that the high off-the-job training return is related to a signaling effect (Spence 1973) as workers receive certification/qualification papers.¹⁶ Thus, whether facilitated via a contractor, an association or a company, training among construction workers is common and well-organized, allowing for individual financial gains.

¹⁵ For instance, the SME Development Policy (2003) establishes and strengthens institutions supportive of SME development and is committed to the creation of an enabling business environment, developing infrastructure, and strengthening financial and non-financial services for the informal sector.

¹⁶ Comparing two supply-side interventions in Ethiopia, Abebe et al. (2021) find that the effect of subsidies is short-lived, while certification has lasting impacts.



Table 4 Training returns by sector

	(1) Micro trade	(2) Transport	(3) Construction
Training school	0.456* (0.244)	0.084 (0.085)	0.394*** (0.144)
Training association	0.666 (0.440)	- 0.274 (0.280)	0.403* (0.209)
On-the-job training	0.096 (0.129)	0.161* (0.097)	0.250** (0.111)
Informal training	0.174 (0.113)	0.149 (0.117)	0.178 (0.145)
Male	0.319*** (0.087)	0.238 (0.165)	0.782*** (0.194)
Member	0.258*** (0.094)	0.032 (0.067)	- 0.091 (0.079)
Age	0.057*** (0.022)	0.030 (0.024)	0.022 (0.025)
Age squared	- 0.077*** (0.027)	- 0.033 (0.030)	- 0.036 (0.031)
Married	- 0.058 (0.095)	- 0.036 (0.098)	0.063 (0.098)
Assets	0.132 (0.105)	- 0.014 (0.069)	0.167** (0.081)
Local	- 0.089 (0.099)	- 0.056 (0.070)	- 0.162* (0.095)
Post sec. education	0.401** (0.159)	0.162 (0.104)	0.123 (0.118)
Chance	- 0.044 (0.138)	0.021 (0.082)	0.028 (0.088)
Money	0.149 (0.097)	0.147** (0.072)	0.015 (0.099)
Education/training/passion	- 0.093 (0.136)	0.022 (0.091)	0.046 (0.103)
Tie strong	0.150 (0.251)	0.003 (0.090)	0.253*** (0.121)
Tie weak	0.097 (0.125)	- 0.071 (0.081)	0.105 (0.091)
Micro-business	0.225* (0.119)	0.093 (0.160)	0.227 (0.174)
Wageworker	- 0.795*** (0.191)	- 0.246*** (0.081)	- 0.123 (0.124)
Dodoma	- 0.630*** (0.133)	- 0.573*** (0.106)	- 0.039 (0.156)
Kisumu	0.203	- 0.226***	- 0.196**



Table 4 (continued)

	(1)	(2)	(3)
	Micro trade	Transport	Construction
	(0.126)	(0.083)	(0.097)
Dar	- 0.279**	- 0.298***	- 0.334**
	(0.120)	(0.102)	(0.131)
r2	0.23	0.18	0.19
N	509	450	426

Source: Author's elaboration based on SPIWORK data. Standard errors in parentheses * $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

As for micro-traders only off-the-job training is associated with significant earning returns. Traders vary in the products they sell and thus it makes sense that they have more to gain from attending external courses on how to develop entrepreneurial skills, rather than following other traders. In both Kenya and Tanzania micro-traders mention the benefits associated with relevant business training, and often succeed in realizing these gains through producing and selling higher quality products at better prices and in turn increased earnings.

Among transport workers only on-the-job training is significant, which is in line with the earlier evidence that drivers and conductors learn from watching/imitating other drivers. In Tanzania informants during boda-boda FGDs testified that they acquired their driving knowledge and skills by riding someone's motorcycle on parking lots.¹⁷ Also, as mentioned earlier barriers to off-the-job training in transport include the relatively high (financial and time) cost of training programmes, and concerns about post-training job security. For these reasons, it is understandable that many transport workers rely on on-the-job training enabling them to stay in their job with the potential of receiving higher earnings (as compared with workers who are self-taught).

In terms of worker types, especially among wagedworkers, who have the lowest income on average, training, including informal coaching by a family member, has the potential to boost earnings.¹⁸

In sum, the analysis has shown that off-the job, on-the-job and informal training are all associated with higher earnings in both Kenya and Tanzania, with some variation across countries and sectors. The results are in line with comparable studies from SSA including Rosholm et al. (2007) and Alfonsi et al. (2020), yet the earnings estimate is generally higher compared with studies based in an East Asian context (Hansen et al. 2022; Bjerge et al. 2021; Lee et al. 2019).

¹⁷ Training on the job is more prominent in Dar-es-Salaam when compared to Dodoma because Dar-es-Salaam has a vast number of mainly boda-boda groups where one can start learning on the job as 'DAIWEKA' (read: day-worker).

¹⁸ Results available upon request.



The Role of Worker Associations in Facilitating Training

In Kenya, informal worker associations, especially the more established Savings and Credit Cooperatives (SACCOs)¹⁹ may collaborate with schools to provide training access and support as explained by a boda-boda SACCO Chairman:

The need for ownership is because they want all their riders to own the bikes they ride so that they are independent. We want the members to be fully qualified riders by undergoing training and getting insurance. The members are being trained at KES 5000 (app. USD 39). When they pay KES 1000 they start training and pay the rest in instalments as they train. Training is done in collaboration with the Motor Rider School in Nairobi. This partnership is good because we offer them training room and our members on the other hand get training. (KII, Kisumu 2018).

This SACCO also facilitates access to loans, from financial institutions such as City Corporation and Equity Bank for motorcycle drivers to buy their own bikes. In this particular off-the-job training example, the cost is not as high compared to the earlier example of transport workers in Tanzania, which may partly explain why this type of training is more common in Kenya. However, there are also more expensive examples in Kenya. For instance, the transport union TAWU offers 3-day training workshops for KES. 25,000 (app. USD 195) yet explains that many members do not attend the training, although it is unclear whether this is only a cost issue. Other worker associations collaborate with the National Industrial Training Authority (NITA) which provides association members training on financial literacy and management. To join NITA a membership fee of KES 5000 and an annual subscription fee of KES 6,000 is required. In some cases, training may be sponsored, as explained by the Chairman of a matatu association when asked whether they had offered training to the members:

In 2018 TOTAL Kenya sponsored the members to attend seminars on public relations and road courtesy. We have a contract with TOTAL. Our members enjoy a discount for fuel. We are also working with ICEA to provide insurance services. When we get a sponsor, we are able to offer some training. Matatu workers are also very busy and have less time to dedicate to training (KII, Nairobi 2019).

However, even when training is offered free of charge workers may not have the time to undertake training. Thus, in both Kenya and Tanzania, transport sectors workers may face several off-the-job training related barriers, making on-the-job and informal training options more suitable at times, especially in Tanzania.

Turning to micro-traders in Tanzania, informal workers may gain access to training via their associations which often are linked to umbrella structures like

¹⁹ The SACCOs oversee securing insurance covers, dealing with traffic police, loaning and securing PSV badges. See Riisgaard (2021) for further detail on the transport SACCOs in Kenya.



VIBINDO (formed of smaller associations) or TUICO (a trade union) which facilitate access to external services such as business training even abroad:

Yes, we thank them [TUICO] because we are 65 members when two go and receive training, and they will come back to educate us also, one member goes to Europe to receive some trainings and was sent by TUICO. She attended different seminars and participated in different things when she came back she trained us, so these seminars are really helpful even though we don't attend all of us but those few who receive trainings are helping us (FGD, Dar-es-Salaam 2019).

This shows how workers who undergo training pass on their new skills by re-training co-workers on-the-job:

The most important event is sharing the knowledge and experiences that some of our selected members acquired in various entrepreneurial seminars and trainings (Dar-es-Salaam 2019).

Beyond the associational level, the Tanzanian Government has during the last couple of decades introduced various measures to improve entrepreneurship skills through vocational training and facilitating access to profitable markets (Palangyo 2021). This was part of the Sustainable Industries Development Policy launched in 1996 (effective until 2020) which acknowledged that informal activities supplement many citizens' earnings. Moreover, focusing on women traders, the Small Industries Development Organization was established to provide entrepreneurship skills under the Women Entrepreneurship Development.

In Kenya associations also play an important role in facilitating training for informal workers, for example via the Kenya National Alliance of Street Vendors and Informal Traders (KENASVIT), which is an umbrella body representing street vendors and informal traders. KENASVIT has demonstrated success in organizing and empowering workers (both members and non-members) to improve their businesses through credit access and different types of training including advocacy, dialogue and negotiation with local authorities and other relevant organizations (Mitullah 2010). KENASVIT also trains other large organizations which then retrain their members. For instance, according to the Chairman of the Nairobi Informal Sector Confederation (NISCOF) training by KENASVIT has enabled them to train their members on topics like business management, record keeping, national health insurance fund (NHIF) and advocacy, thus illustrating some of the potential training opportunities facilitated by associations.

When it comes to the construction sector, some associations get invitations for their members to attend training by the Kenyan national construction authority (NCA) on specific trades as well as safety issues. Those who attend the training will receive accreditation cards putting certified workers at an advantage compared with workers without accreditation.



Sometimes we get invited for training by NCA, safety and inspection unit, and some manufactures of cement (Bamburi) and paint (Crown).²⁰ These trainings are accessible for free. Today a training is going on at a Kisumu Hotel by NCA. The NCA provides certification for different categories in construction sector (e.g. skilled workers, contractors and site supervisors). Certification is accessible to all those who are registered. (Migosi Builders Association Chairman, 2018, Kisumu).²¹

When training is provided at no cost, workers are more likely to participate and benefit:

I saw an advert on KCB website on self-employment programme. I applied and I was shortlisted. It is part-time training for free. I go there from 8am to 12noon. I was a loader before I became a painter. Now I am training on building and construction. We have advanced. We are not just painting but undertaking professional painting (KII, Kisumu 2018).

In Tanzania, many informal construction workers start as helpers and learn-by-doing often facilitated by their associations who may also encourage off-the-job training as indicated by the leader of a carpentry association:

Yes, when it comes to capacity building we assist each other by providing on-job-training to our members. I for one have assisted six youth I trained them how to build and now they are working on their own, further to that my advice to them was that in order to enhance their capacity they should register with VETA for further training. We usually tell the wagers to pursue further training because currently everything is performed in a modern way (KII, Dar-es-Salaam, 2018).

In sum, the qualitative insights have demonstrated the importance of worker associations in facilitating and/or providing training access across sectors in both Kenya and Tanzania. As such associations may help informal workers overcome certain training related barriers including in relation to cost, especially when it comes to off-the-job training.

Conclusion

This paper has examined the returns to on-the-job-, off-the-job and informal training, for informal workers across the sectors of construction, micro-trade and transport in urban areas of Kenya and Tanzania. In focussing on informal workers and the role of their associations in facilitating and/or providing access to training the paper adds to a growing literature on training returns in developing countries. The findings

²⁰ Bamburi and Crown are companies dealing with building and construction products. There is also evidence of a Qatar-based company funding training for members of the Kaberia Jua Kali Association.

²¹ The NCA works closely with registered contractors although workers are generally hired on an informal basis.



reveal substantial earnings gains for workers who undergo all types of training, as compared with those who are self-taught. Construction workers seem to benefit relatively more from training compared to micro-trade and transport sector workers. In both countries transport related off-the job training costs are relatively high, especially in Tanzania. Thus both financial and non-financial barriers to training need to be reduced for workers to gain from off-the-job training and in this regard worker associations play an important part, as evidenced by off-the job training in construction sometimes being offered free of charge through worker associations partnering with training institutions, in both Kenya and Tanzania.

For micro-traders in Tanzania several policies have focused on enhancing earning opportunities including training initiatives which may explain why the overall returns are substantially higher in Tanzania compared with Kenya even though training incidence for both on- and off-the-job training is generally higher in the latter. Given the importance of associations in facilitating training, especially providing access to off-the-job training, it is no surprise that in Tanzania, gains seem to accrue especially for workers having trained through one of the larger worker associations. This in turn suggests that association membership is relatively more valuable for Tanzanian workers, whilst in the Kenyan context at least the larger associations (i.e. KENASVIT) facilitate training for both members and non-members. The fact that the training premium for Kenyan workers is generally not as high could also suggest that the education system provides young people with general abilities that are relatively more important earnings determinants, whilst in Tanzania training, even when informal, makes up for sub-optimal general education. Indeed, the findings show that when workers are unable to find formal employment following general education, they often undergo sector specific training suited to the informal work at hand.

Similar to existing studies, the paper shows that if training benefits are not realized immediately, workers may be hesitant about undertaking training. The fact that training is associated with higher individual earnings, however, should encourage informal workers to enrol in training programmes. Moreover, given that higher earnings reflect enhanced productivity to some extent, this provides support for the enhancement of training opportunities and subsidized workplace training which are important in ensuring a smooth school-to-work transition not least in the high youth unemployment contexts of Kenya and Tanzania causing many workers, even some highly educated ones, to make a living in the IE.

Indeed, boosting certified training schemes across sectors could enable more informal workers to find productive employment in the formal sector. Since workers face a loss in earnings during the training period government support should also be directed towards workplace training programmes, for instance through wage subsidies. In addition, there is a need to tailor training to specific worker needs so that training becomes a worthwhile investment for workers. In combination such efforts would help towards formalizing labour markets and furthering decent work, also in informal settings.

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Declarations

Conflict of interest The author states that there is no conflict of interest.

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