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Skills Training, Corruption and Organisational Capabilities: An Analysis of Bangladesh's Garment Industry

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ABSTRACT Skills training programmes are critical for job creation and structural transformation in developing countries. However, they often achieve poor results because of corruption. By looking at evidence of fraud in a group of training providers in Bangladesh, we identify a deeper problem. Many firms have low productivity due to low organisational capabilities and prefer to employ cheaper untrained workers because their production lines do not move fast enough for training to make a difference. At the other end, very high-capability firms also have limited demand for trainees from average training providers. Without addressing this problem, skills training may fail to create employment. What is worse, outcome-based reward schemes create incentives for providers to fraudulently overstate trainee placements, hiding the source of the problem. We test the hypothesis that providers supplying lower-capability firms and very high-capability firms are compelled to engage in higher levels of fraud. We test this non-linear relationship between the propensity to misreport by training providers and the organisational capabilities of firms by utilising a unique dataset from the Sudokkho skills programme, covering the first half of 2018. Our regression results support the hypothesis and demonstrate the importance of jointly addressing firm capabilities with skills training.

KEYWORDS: Bangladesh; corruption; employment; garment industry; organisational; capabilities, skills

JEL: D73; H52; J24

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1. Introduction

Skills training is subject to well-known market failures that can result in underinvestment by the private sector. Public policy and public resources are typically required to deliver the right level of skills training. However, if incentives and enforcement are not aligned with achieving the policy goals, public resources dedicated to training may be wasted as a result of rent-seeking behaviour, including fraud, corruption, or collusion. An even more serious problem is that the fraud or corruption may hide why the policy is failing and prevent the emergence of more effective solutions (Almeida, Behrman, & Robalino, 2012; Khan, 2000).

Public investments in skills have been important in inclusive development strategies and for supporting structural transformation (Maclean, Jagannathan, & Sarvi, 2013; Sakamoto & Sung, 2018). Governments and development partners have invested huge sums across developing countries (Almeida et al., 2012). The World Bank has invested around US\$2 billion in skills between 2016 and 2020, with \$190 million in Bangladesh alone.¹ However, multiple studies have found that skills programmes have generated poor outcomes for wages, productivity and employment (Betcherman, Olivas, & Dar, 2004; Blattman & Ralston, 2015; World Bank, 2015). These findings are paradoxical given the widespread perception that skills training can raise productivity and aid structural transformation. A better understanding of the problem is required.

The governance of skills programmes is complex and measuring success can be difficult. In theory, value for money is best assessed by the treatment effect on the share of trainees getting jobs or getting jobs with better pay. However, different types of fraud, collusion and corruption used to misreport outcomes often undermine these assessments. Private Training Providers (PTPs) are particularly prone to misreporting if they are financially rewarded for trainees successfully placed in employment. While such rewards incentivise training for the market, they also incentivise misreporting of outcomes in the weak governance contexts of developing countries. Misreporting is particularly harmful because it also hides the problems facing skills programmes, thereby preventing improvements in the design of incentives and governance schemes (Almeida et al., 2012; Khan, 2000).

This paper focuses on PTPs providing training for the garment industry in Bangladesh. An early World Bank (2007) tracer study across sectors in Bangladesh found that two years after graduation, only around 12 per cent of trainees from public- and private sector technical and vocational education and training (TVET) organisations were in employment. Considering that some of these graduates would have found employment regardless, the treatment effect of the training is much smaller.

We initially engaged in an extensive qualitative study of the training sector in Bangladesh. We interviewed key individuals in different types of PTPs, in implementation agencies charged by governments or development partners to appoint, monitor and remunerate PTPs, and in garment factories employing trainees. We also spent time observing the processes of training and placement, and the behaviour of different types of firms employing workers from training providers or unskilled workers at the factory gate. The interviews and observations were facilitated by a close engagement with SEIP, the largest skills programme in Bangladesh, and by developing a research partnership with Palladium International, an international development company that ran the Sudokkho skills programme in Bangladesh. The interviews and observations were conducted in 2018, with follow up interviews in 2019.

Through these interviews and observations, we learnt that the poor performance of training programmes and the problems of fraud were both related to the interdependence of the demand and supply sides of training. Demand-side factors have gained increasing attention in the literature recently (Andreoni, van Huellen, Katera, & Jahari, 2024; Carranza & McKenzie, 2024; McKenzie, 2017), with studies pointing at search frictions between job seekers and employment providers (Carranza et al. 2022) and the lack of skilled jobs that could absorb trainees (Allais, 2022; Andreoni & Chang, 2016; Khan, 2019a) to explain poor training outcomes. However, our

study points to a different demand-side problem which has not been sufficiently understood in the literature. Firms differ considerably in their capacity to utilise skilled workers due to differences in firm capabilities, and in particular *organisational* capabilities. Organisational capabilities refer to routines that are collectively followed by actors interacting within an organisation.

Better trained workers may make no appreciable impact on a low-capability firm's productivity or profitability due to poor internal organisation. Skilled workers who are standing idle for long periods because of organisational failures do not add to productivity. These firms prefer to hire cheaper unskilled workers because their production lines are moving slowly anyway. Skilled workers usually cannot address this problem on their own. In contrast, higher-capability firms seek out skilled workers because they can fully utilize them, and they add more to revenues than to costs. These firms are also able to detect poorly trained workers because they slow down their production lines. Unfortunately, firms often do not recognise limitations in their organisational capabilities. If their production lines continue to run slowly after hiring trained workers, they attribute that to poor training quality and go back to hiring unskilled workers from the factory gate.

Based on these insights gained from our qualitative study we hypothesise that the interrelationship between firm capabilities and the productivity gains achieved through skills training is at the heart of the problem that drives both the low success rates of skills programmes as well as fraud and corruption by skills providers. This is likely to be a problem not just in Bangladesh, but possibly much more widely. Trainers supplying low-capability firms must either truthfully report low employment success and suffer the financial consequences or engage in fraudulent overreporting to get paid for the training they have delivered. In country contexts where corruption and informal arrangements are widespread, fraud is an easier option than identifying and responding to the difficult underlying causes that may be making placements difficult. What is worse, fraud and corruption make it difficult to identify the source and responses to this problem. Our observations also indicated that PTPs supplying firms at the top end of the organisational capability spectrum face a similar problem. Very well-organised firms have firm-specific training requirements that the average PTP cannot meet, and here too PTPs face a problem in placing trainees.

To test the hypotheses that emerged out of our qualitative investigations, we collected data using our partnership with Palladium. This allowed us to obtain sensitive data from PTPs in the Sudokkho skills programme. The data includes information about the firms where the PTPs placed their trainees, trainee characteristics, and mismatches between employment reported by PTPs and actual employment recorded in follow-ups by Palladium for 1,099 trainees that graduated in the first six months of 2018. We also collected additional data on firms provided by the National Board of Revenue. We use this data to empirically test our hypothesised relationships between the PTPs' propensity to fraud and the organisational capabilities of the firms they supplied.

In line with our hypotheses, we find that PTPs supplying lower-capability firms have a much higher propensity to misreport employment than those supplying higher-capability firms. As firm capabilities increase, the propensity to misreport declines, flattens and eventually increases again when training providers supplying average standards of training try to supply firms with very high organisational capabilities. We find that accounting for this non-linearity in a simple polynomial regression model results in significant coefficient estimates and a very good fit between a PTP's propensity for fraud and the organisational capabilities of the firms it supplies. We conduct a number of robustness tests to control for possible selection effects and confounders, which confirm the robustness of our findings.

We conclude that an effective strategy to tackle fraud in the sector requires improving effective demand for skilled workers through appropriate investments in organisational capabilities of firms at the lower end of the capability spectrum and improving the quality of training provided by PTPs supplying highly capable firms. We present evidence that simultaneously

investing in firm capabilities is a feasible strategy of enhancing effective demand for trained workers. This is essential to achieve both the desired employment effect and to reduce the fraud that hides the failure. Fraud reduction is achieved by reducing adverse incentives for PTPs and by triggering effective ‘horizontal checks’ between firms and PTPs that work to check training quality and further reduce the likelihood of misreporting (Khan & Roy, 2022). Without these steps, in the typical developing country, standard monitoring and accountability measures are unlikely to reduce fraud nor lead to the identification and resolution of the problem.

The remainder of this paper is structured as follows. Section 2 outlines our hypotheses on how demand-side capability factors affect employment results of skills programmes and the incentives to misreport by training providers. Section 3 introduces the Bangladeshi garment sector and summarises the key findings from our stakeholder interviews and observations of two skills programmes, SEIP and Sudokkho. Section 4 describes the methods and data used in the regression analysis and Section 5 reports the results. Section 6 concludes with a discussion on policy implications and outlines a feasible anti-corruption strategy for the Bangladeshi skills sector that is likely to have a substantial positive impact on both employment and fraud and is likely to be relevant for a broad range of developing countries.

2. Organisational capabilities, productivity, and skills sector governance

2.1. Organisational capabilities and skills demand

The internal organisation of firms is a critical determinant of firm performance (Bloom, Eifert, Mahajan, McKenzie, & Roberts, 2013; Lall, 2003, 2000, 1992; Penrose, 2009; Sutton, 2012). Organisational capabilities describe how well a firm operates as an *organization*: how well its production processes have been set up, how production is monitored, who is responsible for different jobs, how tasks are coordinated, how quality is controlled, who is responsible for detecting problems, what happens when these are detected, and so on. These collective capabilities describe how actors within the firm *interact* with each other and with others outside the firm to achieve the fastest and most efficient conversion of inputs into outputs. In contrast, skills describe the capabilities of individuals in completing their *own* tasks. However, skills and organisational capabilities are related because the productivity of an individual depends not just on the skills of that individual, but also on how effectively the organisation is collectively working so that these skills are fully utilised (Khan, 2019a).

Differences in organisational capabilities can account for huge differences in firm productivity. Firms using similar machines, with workers of comparable skills may present differences in productivity of 500 percent or more (Clark & Wolcott, 2003; Sutton, 2000). Organisational capabilities determine whether production lines move fast or slowly, the extent of input wastages and output reject rates, stoppages due to missing inventory, spare parts or poor order flow and so on. Firms with high organisational capabilities achieve higher levels of productivity with similarly skilled workers. Moreover, skills training is only likely to translate into higher worker productivity if the firm has the capability to use these skills to achieve faster or higher quality production. In contrast, firms where production lines move slowly or quality control is weak because of collective organisational failures may have low productivity with similarly trained workers and additional training may deliver limited results. Skills training may therefore have a range of effects on productivity, from zero to very positive, depending on the organisational capabilities of the firm, as shown in Figure 1.

For a firm with low organisational capabilities, an improvement in the skills of a specific set of workers from S_1 to S_2 may have no noticeable effects on the value added by these workers. In these firms, production lines may move slowly, or there may be frequent down time because of bad order flow, missing inventory and spare parts, high rates of product rejection, and so on, for reasons beyond the control of individual workers. If the technology is relatively simple as in garments, unskilled workers may perform just as well in firms with slow-moving

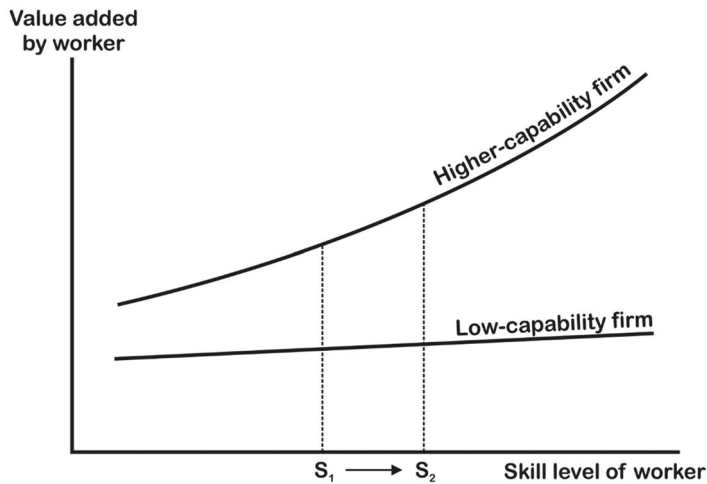


Figure 1. Skills, organisational capabilities and productivity.

Source: The Authors.

production lines after a few days of on-the-job training. Employing skilled workers may appear to produce little additional effect for the firm and the firm is likely to wrongly attribute this to the poor training of the worker. In contrast, in a firm with high organisational capabilities, production lines are moving rapidly, and the ability of a worker to perform quickly and precisely adds value. Here, an improvement in skills from S_1 to S_2 for lagging workers may have a sizeable impact on the value added by these workers.

The value added by a worker therefore depends not just on the individual skills of the worker, nor even the skills of other workers, but also on how the activities of individuals within the organisation are coordinated. The organisational capability of a firm describes how effectively cooperation and coordination is organised. This capability is embedded in a firm's organisational routines (Dosi, 1988; Nelson & Winter, 1982; Perez & Soete, 1988). Unlike skills embodied in individuals, organisational capabilities refer to the collective knowledge embedded in operational routines that coordinate different internal processes. The organisational capability of a firm or organisation is therefore a measure of the effectiveness of its organisational routines compared to its competitors.

Skills describe knowledge about specific activities like operating specific machines or keeping accounts. Organisational capabilities describe the sum of tacit knowledge within a firm about how to interact and coordinate with others to maximise output, profitability, and competitiveness. This tacit knowledge is embedded in routinised organisational behaviour. In an effective organization, everyone need not know everyone else's routines but an efficient organisation needs to have effective routines that each member knows and follows (Khan, 2019a).

Organisational capabilities are therefore not to be confused with the skills or quality of management, because managers may lack the power to experiment and adapt all the routines within a firm or ensure that everyone follows them. Putting a good manager into a badly organised factory may therefore make little difference unless the manager can recast relevant organisational routines. Similarly, in a well-working organisation, particularly one producing relatively simple products, the departure of individual workers, managers or supervisors usually does not create much disruption because the relevant organisational routines are already in place and new entrants with appropriate skills can rapidly fit into these routines. Organization building is therefore more than what day-to-day management entails. Organisational transformation requires a different type of management to learn routines from more efficient firms and adapt them to local conditions through intense experimentation and collective learning-by-doing (Bloom et al., 2013).

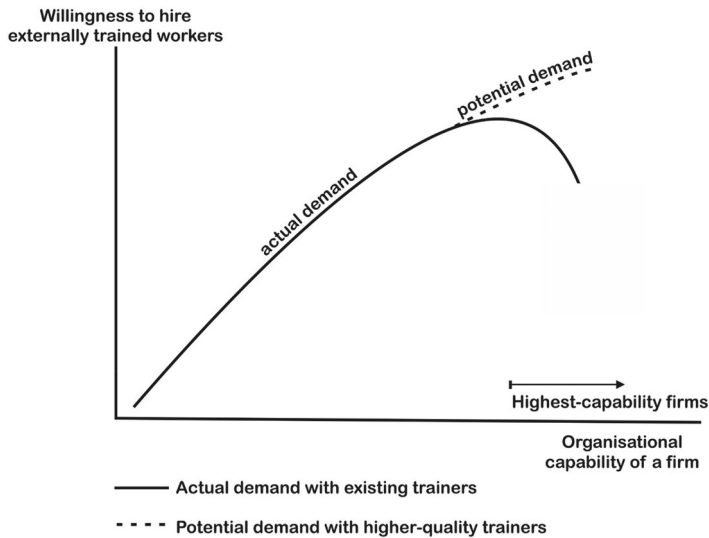


Figure 2. The paradox of skills demand.
Source: The Authors.

From a relatively homogenous set of early firms that imitated the organization of the first firm, considerable variation in organisational capabilities has emerged in the garments industry and we describe a method to measure these indirectly. These differences can account for some of the paradoxical behaviour observed in our interviews. Low capability firms that appear to be most in need of productivity improvements often have the lowest demand for skilled workers, because for these firms the marginal product of a skilled worker is not much higher than an unskilled worker. In contrast, mid to high-capability firms are willing to pay a premium for workers with higher skills because they can convert these skills into higher profitability. [Figure 2](#) summarises this paradox. Demand for skills *increases* with organisational capabilities. However, very high capability firms have specific organisational routines and technical requirements and prefer bespoke inhouse training. They will only hire from external trainers if the quality of training is high and adapted to their requirements.

2.2. Hypothesised relationship between PTP fraud and firm capabilities

Market failures that restrict private returns to investments in skills training mean that training programmes usually receive at least partial public funding, and this is also the case in Bangladesh (Atchoarena, 2009). But for public funding to be effective, appropriate incentives and governance structures are required to prevent the funding being wasted. A common mechanism is to link part of the payments to PTPs to their success in placing trainees in jobs (ibid.). But this can create incentives to misreport employment and placement numbers. Achieving the desired result depends not only on effective monitoring by programme managers overseeing payments to PTPs, but also on effective actions afterwards. The political settlements framework argues that the monitoring and enforcement of rules in any system is only likely to be effective if (i) following the rules is feasible and in addition, (ii) there are at least some ‘horizontal’ actors (who are not themselves monitors and enforcers) who have the power, capabilities and interests to use information about violations to correct violations, pursue violators and put pressure on the enforcers to enforce (Khan, 2019b; Khan & Roy, 2022).

Enforcement is most likely to be effective when sufficiently powerful actors who are directly affected by these violations seek the relevant information and have the interest to pursue violators by putting pressure on enforcement agencies to take corrective actions. Thus, it is unlikely

that PTPs who are violating rules by overstating employment outcomes will be sanctioned if the firms they serve have no demand for trainees and are unlikely to pursue funding bodies and programme managers who are supervising the PTPs. Moreover, if programme managers know that PTPs are putting in a lot of effort to train, they may not act against PTPs who overstate placements in a context where most rules are not strictly enforced. Indeed, programme managers may have incentives not to be too scrupulous if they know the next PTP would have to do the same or the training programme as a whole would have to be downsized in terms of its job placement target.

Looking at the problem from a PTP's perspective, the incentive to provide high-quality training depends on the cost of delivering training relative to the payment offered. If payments depend on trainee placement, the PTP will consider the likelihood of trainees finding jobs. If this likelihood is low, a PTP in a country where the rule of law is weak may consider the cost and risk of organising fraud to get paid. If their customers are low-capability firms, the PTP knows these firms have little incentive to check why local training providers are not delivering the numbers of reported placements. In contrast, PTPs supplying higher-capability firms have little incentive to engage in fraud as they can place well-trained trainees easily. In addition, they experience horizontal checks from firms if they deliver low-quality trainees, because these firms are likely to detect poor training and report them if quality does not improve. A more complex problem emerges when PTPs face very high capability firms. Here too the PTP may face low demand and have an incentive to misreport but may be constrained by the likelihood that the firm may detect and report that trainees turning up at the factory gates are not adequately trained. Thus, differences in incentives and relationships between PTPs, their programme managers and different types of firms can result in different levels of PTP fraud. Figure 3 shows the non-linear relationship we hypothesise between the propensity of a PTP to engage in fraud and the average organisational capabilities of the firms they supply to. The propensity to engage in fraud is high for PTPs supplying to low-capability and very high-capability clusters of firms but is low when supplying to moderately high-capability firms.

A complexity is that over time, a PTP's involvement in fraud is also likely to affect the quality of training. Fraudulent PTPs will be unable to motivate trainers to provide high-quality training, and trainers may be selected for their willingness to engage in fraud rather than for their training skills (Ahmed, Greenleaf, & Sacks, 2014). In the longer run, this two-way

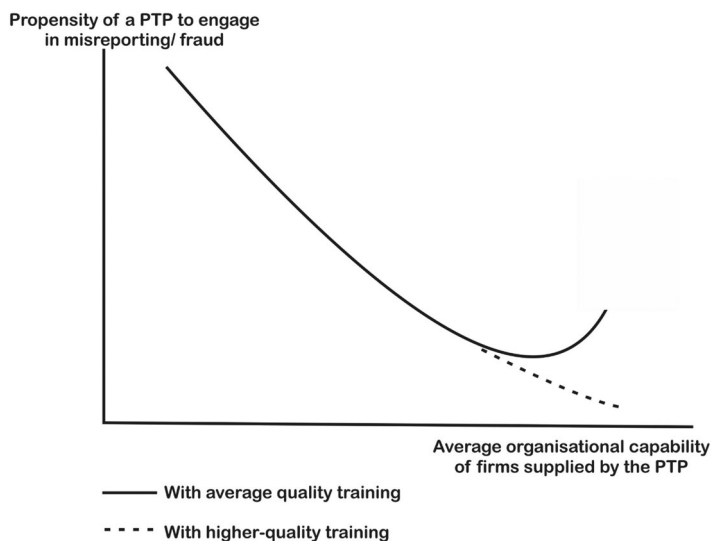


Figure 3. Hypothetical relationship between propensity of a PTP to engage in fraud and the average organisational capability of firms on the demand side.

Source: The Authors.

relationship between placement success and training quality means that the lower employment success of some training providers may then result in their training quality dropping. Subsequent observations may then appear to suggest that the cause of poor employment success of some providers was their poor training quality. Clearly, both directions of causality are plausible. However, the direction of causality that we are interested in can be tested by selecting PTPs that initially have close to identical training quality. If their propensity to fraud is still different, focusing on the quality of trainers will not suffice. Nevertheless, training quality is partly endogenous and likely to deteriorate if the PTP's business model is based on fraud.

If our hypothesis is correct, the effective demand for skills can be increased and fraud reduced by working with lower-capability firms to raise their capabilities towards the level where the effective demand for skilled workers is highest in [Figure 2](#). For firms whose organisational capabilities are already higher than this, a fraud-reduction strategy will require an improvement in the quality of training, and bespoke courses with a more tailored curriculum.

3. Skills training, corruption and organisational capabilities in the Bangladeshi garments industry

3.1. The supply and demand for skilled workers

The garments industry is the most developed manufacturing activity in Bangladesh employing around four million workers. The country is also one of the largest suppliers of readymade garments globally (Hossain & Mahmood, 2018; Mottaleb & Sonobe, 2011). While the garments industry is usually seen as a low technology industry, success in global value chains requires high organisational capabilities of firms to routinely manage order books, maintain rapid production lines, maintain quality, the requisite inventories, and so on. The emergence of the sector was based on the successful acquisition in the late 1970s of organisational capabilities by the Bangladeshi company Desh from Daewoo, a South Korean company. Daewoo was seeking a production partner in a country that did not have US quotas under the Multi-Fibre Arrangement (Khan, 2019a; Mottaleb & Sonobe, 2011; Rhee, 1990). The dramatic take-off in the Bangladeshi garments industry from the late 1970s was driven by the rapid replication of these efficient organisational routines in hundreds of imitators through the migration of managers and supervisors (Khan, 2019a). The acquisition and transfer of organisational capabilities was arguably the most important factor in the growth of the industry as the take-off was not preceded by any significant changes in governance or policy, or any dedicated skills programme.

As product quality and productivity improved over the years, the sector faced the challenge of continuously upgrading skills and organisational capabilities to produce higher value products. But success in firm-level upgrading has been mixed. The sector still has low average productivity compared to international competitors but is now very heterogeneous with firms with very different organisational capabilities and productivity. However, employers are generally less aware of their organisational limitations, and regularly report skills, worker shortages and the high turnover of workers as the prime reasons for low productivity (Hossain & Mahmood, 2018).

Several surveys in Bangladesh have identified skills gaps (ADB., 2014b, 2015; GOB., 2011, 2015; ILO., 2012; Rahman, Mondal, & Islam, 2012; World Bank, 2007). Around 500,000 students enrol in technical and vocational education and training (TVET) programmes in Bangladesh every year (ADB, 2014a). Around 95 per cent of TVET institutes are now in the private sector covering roughly three quarter of TVET students. However, the overall contribution of TVET to education in Bangladesh remains limited. TVET graduates serve only about 20 per cent of the country's annual estimated training needs (ADB, 2014a) and labour force surveys have shown that for every employee with a TVET qualification, there are 104 with

secondary or higher secondary school certificates, and 34 with university degrees (World Bank, 2010).

The supply of high-quality skills training in Bangladesh is constrained by numerous problems. First, there is a shortage of trained teachers due to the poor output of teacher-training colleges. Secondly, particularly in public TVET institutes, there are poor internal incentives to reward training quality. Thirdly, bureaucratic delays in releasing funds delay decisions on trainer appointments. There is typically a 50 per cent vacancy rate for teaching positions in public training institutes, and positions are often filled by less qualified but politically connected individuals. Fourthly, there are pedagogic shortcomings, with an overemphasis on theoretical rather than practical skills. Fifth, funding is often inadequate to maintain facilities. Finally, links with business are often weak leading to a lack of coordination between training needs and training design (ADB., 2014b, 2015; GOB., 2011, 2015; ILO., 2012; Rahman et al., 2012; World Bank, 2007).

The very low share of TVET graduates in employment could reflect poor training quality, but it could also reflect low effective demand for trainees. Of the studies reviewed above, only GOB. (2015) makes a reference to possible demand-side problems. Firms with characteristics suggesting low organisational capabilities have been found to record higher turnover rates among workers than higher capability firms (Hossain & Mahmood, 2018).² The levels of education and overseas training of managers and entrepreneurs in the garment sector (which are likely correlated with organisational capabilities) have been linked to productivity and the overall performance of enterprises (Mottaleb & Sonobe, 2011).

The supply side problems are increasingly addressed by training shifting to PTPs. They are easier to incentivise to respond to private sector needs by linking their remuneration to placement outcomes; a strategy widely adopted by government, development partners and their programme managers in Bangladesh and elsewhere. Typically, programme managers acting for government or development partners contract PTPs, monitor their performance and make payments in a staggered way. Part of the cost of training each trainee is paid at the point of enrolment, a part at graduation, and the final part when the trainee finds employment within a defined period. However, despite strong incentives to respond to employer demand, PTPs have no way of addressing the problem of low demand for skilled workers in firms due to low organisational capabilities or other constraints.

3.2. Qualitative assessments of actor behaviour, and corruption and fraud in training programmes

Extensive interviews and observations of actor behaviour began in 2018, with follow-up interviews in 2019. The interviews were led by the first two authors and a team of researchers working under their supervision. Key informant interviews with supervisors and trainers in two skills training programmes were arranged: 5 in the Skills for Employment and Investment Programme (SEIP) and 6 in the Sudokkho programme; see Supplementary Material for further information about these skills training programmes. In addition, focus group discussions with small groups of workers and production line supervisors (3–4 at a time) in 24 garment firms were conducted.

The garment firms were selected to be of different sizes (employing more than 5000 workers, between 1000 and 5000 workers, and less than 1000 workers) and located in 3 clusters in Dhaka, Gazipur and Chittagong. The 24 firms were roughly equally divided across these three size categories groups. They were also very roughly equally spread across three regional clusters. No prior information about the internal organization of firms apart from size was available when selecting firms. The sector is heterogeneous, and we aimed to capture this heterogeneity to understand differences in firm behaviour.

We found that people talk freely about corruption if they can be sure that confidentiality and anonymity will be maintained. We established very quickly that we were not interested in naming and shaming, and definitely not in prosecuting, but were interested in understanding why fraud happened. The key insight that emerged from interviews was that fraud in the form of over reporting of employment outcomes was widespread. Further, many stakeholders justified over reporting by pointing out the reluctance of some firms to employ trainees despite claiming that they were suffering from skills shortages. These interviews informed our formulation of the testable hypothesis derived in the previous section. The empirical strategy is summarised in Supplementary Materials Figure S1.

3.2.1. Firms. Focus group discussions with firms asked informants about the employment strategies of their firms (e.g. did the firm prefer to hire untrained workers at the factory gate at lower wages or did it prefer trained workers). We also asked questions that gave us an idea about how well the firm was organized (e.g. were production lines working most of the time or were there frequent stoppages, did management solve internal problems quickly or not). We also observed the employment behaviour of firms by visiting factory gates. These perception-based responses and our observations suggested a clear pattern that better-organised firms were more likely to prefer employing trained workers.

While firms were initially unwilling to talk about their employment strategies, managers often informally shared observations with our team during or after focus group discussions. We observed that firms that appeared to be working well (better-organised firms, with faster production lines and fewer stoppages) were more likely to employ trainees from reputable PTPs, even if their wages were marginally higher than untrained workers available at the factory gates. In contrast, less well-run firms appeared to be reluctant to pay higher wages and preferred to hire untrained workers. This was a counter-intuitive finding because we expected that lagging firms would be more interested in skilling up their workforce.

The management of these lagging firms generally argued that this was because the PTPs were providing poorly-trained workers who did not improve the productivity of the firm. They were therefore not willing to pay them higher wages and preferred to hire untrained workers and give them on-the-job training. We began to understand that skilled workers even from reputable PTPs were not adding to the profitability of some low-capability firms, and they were therefore reluctant to employ trainees despite complaining that they were suffering from skills shortages. If production lines are moving slowly or production is often disrupted for organisational reasons, enhancing individual worker skills have a limited benefit, and indeed if trained workers are more expensive, their idle time is a bigger cost.

In contrast, some observed garment factories were very advanced, using sophisticated mechanization and producing higher-value garments. In these factories the training quality did make a difference because they had specific requirements that were not met by reputable PTPs providing average quality training. Average quality trainees would not know the specific tasks these factories required and would slow down their production lines. When they used PTPs, it was to provide bespoke training within the firm, or they used their own trainers.

3.2.2. Training programmes. The Skills for Employment Investment Programme, SEIP, was the largest skills programme in Bangladesh and provided important insights into the scale of the problem. An officially sanctioned evaluation of the SEIP programme in 2019 found 68 per cent of trainees were in employment a year after completing training (ADB., 2019). However, the study was badly designed and the share of trainees in regular employment was likely well below 50 per cent and in addition, the treatment effect was not measured. In contrast to the official evaluation, in our interviews, programme managers of the SEIP programme privately admitted that PTPs frequently over-stated employment to meet targets. These programme managers did not think this overreporting was unjustified and were happy to release payments without strictly

checking the accuracy of the invoices. As justification they pointed out that the continuation of the programme required meeting ambitious targets. Instead, they blamed firms for dragging their feet in employing trainees from sound training providers while complaining about skills shortages.

It emerged from our interviews that if SEIP commissioned training companies to do the training and set them targets, some of these trainers were unable to meet their targets even when it appeared they were trying their best. The SEIP managers did not have a full understanding or explanation of why this may be happening, but they were critical of garments factory owners who complained they had a skills shortage and then did not take on all the trained workers that were sent to them. By also talking to the supervisors and workers in firms on the demand side, it became clear to us that firms believed their low productivity was due to low worker skills. But when trained workers presented themselves, and the firm tried a few and found productivity did not improve, they went back to employing untrained workers at the factory gate. Firm owners attributed the problem to poor training. Neither firms nor training providers identified organizational capabilities of firms as a problem. But our interviews also revealed that identical training firms experienced better success when sending workers to better organized firms. This led us to hypothesise that training providers who were supplying to clusters of firms with lower organisational capabilities would find it harder to place workers and had much higher incentives to engage in fraud in order to stay in business. Moreover, because fraud hid the differential success of PTPs, the link between employment success and the capabilities of firms on that demand side remained hidden.

To further test these ideas, we worked with Sudokkho, a much smaller programme than SEIP. Sudokkho began randomly checking invoices submitted by their PTPs in 2016 by calling trainees on their mobile phones to inquire about their employment status. In early 2018, these random checks began to detect over reporting of employment and other anomalies in the invoices of some PTPs. When an invoice was red flagged by Sudokkho, an investigation was initiated, payment withheld, and further justification requested from PTPs. On discovering the initial cases of fraud, Sudokkho introduced a tighter monitoring schedule and applied a zero-tolerance policy. Documented fraudulent behaviour led to the cancellation of contracts with PTPs who were also reported to both the development partners and the government. If there was a verified and documented case of fraud the PTP could not continue in partnership with Sudokkho.

However, after six months or so of picking up variations in invoice misreporting across the PTPs, Sudokkho discovered that PTPs were beginning to ‘fix the system’. Random checking began to generate responses that tallied much more closely with submitted invoices. Deeper investigations by Sudokkho revealed that trainees had been briefed that they might be called and had been requested (or incentivised) to respond positively to questions about employment. An interesting finding emerges from this episode: In contexts of widespread informality and high levels of background corruption, invoice checking on its own is insufficient to enforce compliance in the long run, even if the programme manager wants to root out fraud.³ However, the data collected *before* the PTPs began to take significant countermeasures to random checking provide valuable insights into the source of the problem.

3.2.3. Trainees. Entry-level workers in the Bangladesh garments industry are mostly women. We observed that female workers generally prefer to train and work close to their places of residence. Male workers are somewhat more mobile, but the overall mobility of workers in Bangladesh is low. This behaviour means that PTPs located close to specific clusters of firms are in effect training mainly for these firms. Our observations are corroborated by the programme completion report for Sudokkho. This reports that 80 percent of Sudokkho’s garments sector trainees were women, and that contrary to programme expectations, after training, they continued to prefer workplaces close to their home location for family or safety reasons (FCDO., 2021, pp.10–13).

4. Method and data

4.1. Method

The empirical testing of our hypothesis (summarized in [Figure 3](#)) relies on two variables: (i) the propensity to misreport $PM_{i,k}$ by PTP i from which trainee k graduated, and (ii) the average demand-side organisational capabilities $\overline{DSOC}_{i,k}$ of the firms supplied by PTP i from which trainee k graduated. To account for the possible non-linear relationship between the propensity to misreport and demand-side organisation capabilities, we estimate a simple polynomial regression model using ordinary least squares; see [Eq. \(1\)](#).

$$PM_{i,k} = \beta_0 + \beta_1 \overline{DSOC}_{i,k} + \beta_2 \overline{DSOC}_{i,k}^2 + \varepsilon_k \quad (1)$$

With β_0 being a constant, β_1 and β_2 being the slope coefficients and ε_i the error term.

Since we are interested in explaining the propensity to misreport at the level of the PTP, we give equal weight to each PTP by weighting each observation by $w_{i,k} = 1/(I \cdot K_i)$. I is the total number of PTPs that graduated trainees and K_i is the total number of trainees that graduated from the i^{th} PTP. This weighting is equivalent to averaging over each PTP, which could make the analysis prone to outliers if some PTPs graduated smaller numbers of trainees. As a robustness test, we therefore also weight each PTP by the number of trainees graduated. If our hypothesis is correct, $\hat{\beta}_1$ and $\hat{\beta}_2$ are jointly significant with $\hat{\beta}_1$ showing a negative sign and $\hat{\beta}_2$ a positive sign, indicating a convex relationship. Possible confounding factors affecting the relationship in [Eq. \(1\)](#) are controlled in a series of robustness tests described in [Section 4.3](#).

4.2. Data

The analysis draws on a dataset containing anonymised information from individual invoices submitted for all trainees that graduated for the garment sector under the Sudokkho programme in the first six months of 2018. The final full data set includes information about 1,099 trainees, including the trainees' final employment status, the names and locations of the 176 garment factories in which trainees found employment and the names of the 12 PTPs from which they graduated. A full list of variables and data sources is provided in the [Appendix Table A1](#).

In early 2018, Sudokkho began to detect overreporting of employment and other anomalies in the invoices submitted by some PTPs through random invoice checking. Red flags were issued when trainees did not confirm the employment status after training that was reported by the PTP (e.g. trainees reported to be self-employed or to have found employment outside the garment industry after training when phoned, while employment in the garment industry was reported by the PTP) or when trainees reported incomplete training when fully completed training was invoiced for. When red flags were picked up from the invoices, they were queried by Sudokkho, and cleared if due to clerical errors (e.g. identical telephone number for multiple trainees). The sampling period was limited to the first six months of invoice checking in 2018 because significant collusion between trainees and PTPs emerged afterwards, which resulted in an underreporting of red flags.

Information about the number of red-flagged invoices for each of the 12 PTPs included in the trainee data was provided separately due to confidentiality concerns. It remains unknown which invoices in the original dataset were red flagged, i.e. red flags cannot be linked to individual trainees. What is known is the share of total invoices that were red flagged for each PTP over the sample period. Incidences of misreporting was extreme for two PTPs in the original data and their contracts were cancelled during the sample period as a result. As data for these PTPs were incomplete, we excluded trainees which graduated from these PTPs from the

analysis, reducing the number of trainees from 1,164 in the original data file to 1,099 and the number of PTPs from 14 to 12.

From this complete data, a measure for the propensity to misreport $PM_{i,k}$ is constructed as the percentage of red-flagged invoices in total invoices for PTP i from which trainee k graduated over the sample period. The percentage of red flags identified by random invoice-checking does not necessarily tell us the true percentage of fraud or attempted fraud. However, the distribution of red flags tells us something about the propensities to misreport and therefore the propensity to commit fraud. The propensity to misreport across PTPs varied from 1% to 60%.

We then score destination garment factories for their organisational capabilities. A direct approach to assess organisational capabilities based on within-firm observations of procedures was not possible as most firms refused access to factories as well as the completion of a survey to collect this information. Instead, we devised an indirect measure based on pooling several observable outcome indicators based on secondary data to construct the demand side organisational capability index $DSOC_{j,k}$ of firm j where trainee k found employment.

We constructed $DSOC_{j,k}$ from three indicators which indirectly capture different outcomes of organisational capabilities (subscript k is omitted henceforth for better readability): (i) O_{1j} , the unit value of the average exports of firm j relative to the average unit value of the same items for all garments factories in Bangladesh, (ii) O_{2j} , a score measuring the compliance of firm j with building and safety rules, and (iii) O_{3j} , a score for the firm's level of export orientation.⁴

The choice of indicators is motivated by the assumption that organisational capabilities impact performance outcomes, with factories with higher levels of organisational capabilities performing better than those with lower levels (Dosi, Nelson, & Winter, 2000; Leiringer & Zhang, 2021). Three performance outcomes commonly assessed in the literature are improved ability to generate and capture value, adoption of best practices, and achieving competitive advantage (Leiblein, 2011), which have inspired our choice of indicators.

The intuition behind the first indicator O_{1j} is that a factory that produces specific products of higher unit value than the average unit value of those products across garment factories in Bangladesh must have better organisational capabilities. Producing higher valued versions of the same product means that the firm has better systems of internal quality control, better marketing and order management systems that satisfy foreign retailers with more demanding time-lines, better internal systems to manage inventories of more expensive fabrics with stricter quality and colour requirements, and better systems for minimising wastage and quality rejections of more expensive fabrics.

The National Board of Revenue (NBR) records the dollar value of exports of every exporting factory in Bangladesh as well as the physical weight of their exports at the 4-digit HS code level. They base their data collection on information in letters of credit, which is considered accurate. We accessed this sensitive data through our research partner, the Bangladesh Institute of Governance and Development (BIGD) who is trusted by the NBR to anonymize any published results. The data set covers exports by garment factories in Bangladesh, including exports during 2018.

We use this data to calculate the *relative* unit value of exports of product h exported by firm j (RU_{jh}) as the unit value of product h exported by firm j (U_{jh}) divided by the unit value of product h exported by all firms (U_h): $RU_{jh} = U_{jh}/U_h$. Unit values are the dollar value of exports divided by the net weight of the product. We then construct the relative unit value of exports for each firm j as the weighted sum of the RU_{jh} across all its exported products:

$$O_{1j} = \frac{\sum_{h=1}^H V_{jh} RU_{jh}}{\sum_{h=1}^H V_{jh}} \quad (2)$$

where V_{jh} is the dollar value of exports of the product h booked by firm j . Values are set to 0 for firms that do not export.

The second indicator O_{2j} looks at another important outcome of organisational capability. Firms can only be compliant with building and safety rules if they have internal organisational procedures that ensure appropriate improvements in building and safety infrastructure and more importantly, continue to maintain and monitor these. External inspections of building and safety standards of Bangladeshi garments factories began shortly after the Rana Plaza tragedy in 2013 (Ahmed et al., 2014). Since then, two external agencies, Alliance and Accord, carried out inspections of garments factories and provided certifications of compliance. They provide scores for the degree of compliance, labelled as full, partial, or not at all, which we coded as 2, 1 and 0 respectively. Firms that were too small to be inspected received a 0 score as well as these are almost always subcontracting companies that are not formally organized.

The third indicator, O_{3j} differentiates between types of establishments. Most firms that employed trainees from Sudokkho PTPs were export-oriented factories. Some were not direct exporters, but subcontractors who get the overflow business from exporting factories. Subcontractors are smaller factories and are less well organised with a greater exposure to informal practices, which is why they do not directly get export orders. Further, some employers were tailor shops of various sizes who supply clothing to the local market. We distinguish between these three types of establishments and score them from 3 to 1. The intuition here is that export-oriented industries have the highest organisational capabilities while tailor shops that employ people as tailors for the local market operate the simplest type of organisation with limited organisational routines and ability to compete internationally. We used NBR records to identify direct exporters and interviews with local stakeholders to distinguish between the remaining establishment types.

The organisational capability index $DSOC_{j,k}$ was extracted from the three indicators $O_{1j,k}$, $O_{2j,k}$, and $O_{3j,k}$ by means of principal component analysis (PCA). We omitted unemployed and self-employed individuals as observations for the three indicators were missing. $DSOC_{j,k}$ is the first factor which maximises the common variation in the three indicators. The average demand-side organisational capability $\overline{DSOC}_{i,k}$ is then constructed by taking the average for each PTP respectively: $\overline{DSOC}_{i,k} = \sum DSOC_{j,k} / \sum k$ for each $k \in i, j$. We use the average to not exclude unemployed or self-employed trainees from the sample as these contain useful information for further robustness checks.

4.3. Robustness

The validity of our regression model rests on the assumption of absence of measurement error, homogeneity across PTPs and their trainees and the absence of endogenous selection mechanisms.

Given the careful monitoring process within Sudokkho, we are confident that measurement error is not a problem. As all PTPs in our sample were in the same programme under the same programme manager, the payments and incentives offered to the PTPs, the milestones against which payments were made, and the governance structures of the programme manager, Palladium, were therefore identical across PTPs. In addition, Sudokkho defined PTPs' employment success in terms of jobs as sewing machine operators in the garments industry making placement comparisons across these PTPs reliable. Finally, the collection of the invoices, their initial checking, and the subsequent random checking during the period of our study were all done by the same implementing agency. This too eliminates the potential confounding effects of differences in the credibility of invoice checking or differences in the severity of the actions that different implementing agencies may take.

Moreover, the heterogeneity across PTPs that could have been a severe problem was mitigated by the programme design. Sudokkho enrolled its PTPs at around the same time through

a careful process of vetting and then invested in developing training capabilities and ensuring that the right machinery and curriculum were available to all the PTPs. Training the trainers to provide comparable training quality on a common curriculum was a critical feature of the Sudokkho programme. This purposive selection ensured that the training capabilities and training quality of the PTPs were comparable at inception of the programme. However, reverse feedback from poor placement success to declining teaching quality is a possibility. Sudokkho started in 2015, and it took a couple of years to select the PTPs and train the trainers. Our sample data is from 2018, which means training quality is likely to still be comparable across PTPs. To control for possible deteriorations in training quality and reverse feedback from poor placement success to declining teaching quality, we construct an index for PTP capability by use of PCA as an additional control variable in Eq. (1).

The variables from which the index for PTP capability is constructed are: (i) The average level of teacher training obtained by staff, (ii) the average years of experience of staff, (iii) the average number of training courses under the Sudokkho programme completed, and (iv) the average student staff ratio per batch of students trained. The first principal component is retained to form the index. The data (i) to (iii) as well as number of trainers for (iv) was provided separately at the level of the PTP. The remaining data for (iv) is taken from the trainee data which includes the trainee batch number. Unfortunately, the information at PTP-level was missing for one PTP due to multiple training facilities being maintained, which resulted in a reduced sample size to 1,082 trainees. The weights for the regression estimation have been adjusted accordingly.

Sudokkho (unlike SEIP) charged fees from each trainee, which ensured that trainees were genuine jobseekers. However, there is a possibility that PTPs located closer to lower capability firms are in less developed areas and therefore recruit lower capability trainees. Omitting the capability of the trainee as a control variable could then result in a spurious relationship between firm capability and the PTP's propensity to misreport. To control for this possibility, we construct an index for trainee capability and add this as an additional control variable to Eq. (1). The index is constructed using two variables: (i) educational attainment coded as approximate years of education before training, and (ii) the maximum salary obtained in the 6 months after graduation. The index is constructed by use of PCA with the first principal component being used as the index. A higher value indicates a higher level of educational attainment.

We know that trainees select PTPs and seek jobs close to their residence. Since PTPs know this mobility behaviour, they are likely to name local garment factories in cases of fraud. This means that the selection of garment factories is likely to be determined by their distance from the respective PTPs and not endogenously by firm capability. However, to control for the possible selection bias that could arise if PTPs with high propensity to misreport chose to name firms with low organisational capability in their fraudulent invoices in the expectation that it is easier to hide fraud this way, we use the spatial distance between the PTP and the supplied garment factory as an instrument for the demand side organisational capability index.

The spatial distance between PTPs and each of the firms they supply to was estimated in meters using the R package *geosphere* (Hijmans, 2022). To make this possible, each PTP and firm was located on Google Maps via its provided address and the latitude and longitude coordinates were recorded. Addresses provided for garment factories were cross-referenced with locations recorded on Mapped in Bangladesh (<https://map.mappedinbangladesh.org/>) and on Google Maps when searching for firm names. For some firms no unique location could be located, reducing the sample to 139 firms. Addresses for PTPs, where provided, were also cross referenced with information from Google Maps. Observations for one PTP had to be excluded as the PTP maintained facilities at different locations so that no single address could be recorded. This reduced the sample size to 1,082 trainees. For the remaining PTPs the average

distance to the firms they supply, and its squared value were used as instruments in a two stage least square regression.

5. Results

5.1. Baseline results

Plotting the average demand-side organisational capability index by PTP against the propensity to misreport in [Figure 4](#) reveals a non-linear relationship between the propensity to misreport and the organisational capability of the firms supplied as hypothesised in [Section 3.2](#), [Figure 3](#).

Regression results for [Eq. \(1\)](#) further support the hypothesis of a non-linear relationship between the propensity to misreport and the level of organisational capability of the firms supplied by the PTPs as shown in [Table 1 \(1\)](#). Coefficients are significant at the 1 per cent level with the expected signs, indicating a convex relationship. The overall fit is good, with an R-square of 0.79.

To assess whether any of the three indicators used for the construction of the demand side organisational capability index is the main driver of the results obtained, we re-estimate [Eq. \(1\)](#) with each of the indicators separately as reported in [Table 1](#). For this purpose, each indicator is normalised so that it ranges between 0 and 1. As for the combined index, those unemployed or self-employed are excluded before normalisation and the average by PTP is obtained. We also test whether an index constructed with equal weights assigned to each component rather than the common variation being used to determine the weights yields similar results. The additive index is constructed by averaging over the three normalised indicators. We then re-scale the index to match with the index obtained by use of PCA to ensure the coefficient estimates are comparable in size (see Supplementary Materials Table S2 for full details). Finally, we re-estimate [Eq. \(1\)](#) without the weights applied. Thereby, PTPs are weighted by the share of graduates in the sample rather than giving each PTP equal weight.

Results for the additive index in [Table 1 \(5\)](#) are very close to the baseline model, indicating that weight determination for index construction does not make a difference. This is not altogether surprising as the first component used for the PCA-based index captures 74 per cent of common variation and loadings are relatively even across all three indicators (see Supplementary Materials Table S2 for full details). However, when disaggregating the index in its individual indicators results are mainly driven by the type of establishment O_{3j} , as shown in [Table 1 \(2\)–\(4\)](#). O_{1j} is insignificant overall, while for O_{2j} coefficient estimates are insignificant, but the overall model is significant (see joint F-test), suggesting that the relationship might be significant linear.⁵ Coefficient estimates for the model without weights specified remain significant at the 1 per cent level but are smaller in (absolute) size, moving the inflection point to a higher level of organisational capability, as shown in [Table 1 \(6\)](#).

5.2. Robustness checks

For further robustness checks, we first control for two possible confounding factors, which are trainee capability and training quality. We find considerable heterogeneity of educational attainment of trainees (Supplementary Materials Table S3) and training quality indicators (Supplementary Materials Table S4). Following this observation, three additional regression equations were estimated which control for trainee capability and training quality to evaluate the robustness of the obtained results (see Supplementary Materials Table S2 for more information about the construction of these variables). Results are reported in [Table 2](#).

Regression (1) in [Table 2](#) reveals that PTPs with higher capability trainees have a lower propensity to misreport. This is expected as trainees with a higher capability score find it easier to secure employment. However, controlling for trainee capability (TC) does not impact the previous results, which remain robust. Findings are also robust when controlling for training quality

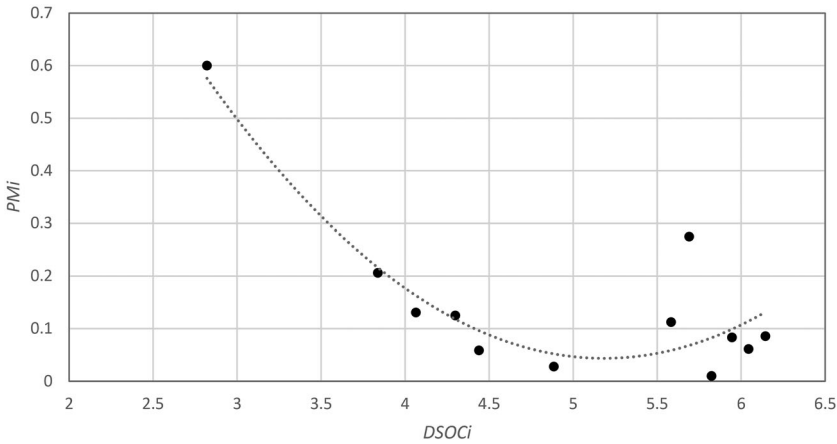


Figure 4. Misreporting by PTPs and organisational capability of the firms they supply.

Source: The Authors based on data provided by Sudokkho. *Notes:* The data points can be found in the Supplementary Materials Table S1.

Table 1. Coefficient estimates for the polynomial regression Eq. (1)

Dependent: PM_i	PCA, weights (1)	Ind1, weights (2)	Ind2, weights (3)	Ind3, weights (4)	Additive, weights (5)	PCA, no weights (6)
$\hat{\beta}_0$	2.6058** (0.1255)	6.9996** (4.0557)	0.2221** (0.0766)	0.5875** (0.0120)	2.5162** (0.1218)	1.3064** (0.1654)
$DSOC_{i,k} (\hat{\beta}_1)$	-0.9887** (0.0508)	-2.7647 (1.5979)	-0.7651 (0.7328)	-1.4304** (0.0425)	-0.9411** (0.0493)	-0.4732** (0.0662)
$DSOC_{i,k}^2 (\hat{\beta}_2)$	0.0954** (0.0050)	0.3157 (0.1205)	0.7039 (1.3690)	0.9858** (0.0387)	0.0899** (0.0049)	0.0453** (0.0065)
R-square	0.7882	0.2928	0.2193	0.8001	0.7873	0.1462
Joint F-test	225.11**	1.50	593.97**	768.51**	268.57**	40.6**
Obs.	1,099	1,099	1,099	1,099	1,099	1,099

Notes.

*significant at the 5 per cent level and.

**significant at the 1 per cent level. Robust standard errors in parenthesis. Ind1 is O_{1j} for the relative unit values; Ind2 is O_{2j} for Alliance Accord compliance; Ind3 is O_{3j} for the type of establishment.

as demonstrated by regression (2) in Table 2. The measure for PTP capability (PTPC) is insignificant, which indicates that any adverse feedback between the propensity to misreport and the training quality did not yet impact training outcomes at the time the sample was taken. Including both control variables does not change these results as shown in Table 2 (3). In addition, the exclusion of trainees from one PTP due to data limitations did not change results and coefficient estimates are close to the baseline as shown in Table 2 (4). Regression (5) in Table 2 uses the distance between PTPs and garment factories supplied and its squared term as instruments for demand-side organisational capabilities to control for possible selection bias. Regression coefficients remain significant at the 1 per cent level but are larger in (absolute) size, suggesting that the inflection point is at a lower level of organisational capability than shown in Figure 4. Overall, results remain robust against confounding variables and selection concerns.

Table 2. Coefficient estimates for robustness checks on Eq. (1)

Dependent: PM_i	PCA, weights TC (1)	PCA, weights PTPC (2)	PCA, weights TC & PTPC (3)	PCA, weights Sub-sample (4)	PCA, weights IV (5)
$\hat{\beta}_0$	2.6640** (0.1327)	2.6163** (0.1111)	2.6730** (0.1177)	2.6024** (0.1123)	3.6492** (0.1136)
$DSOC_{i,k}(\hat{\beta}_1)$	-0.9852** (0.0542)	-0.9945** (0.0442)	-0.9884** (0.0468)	-0.9852 (0.0448)	-1.5259** (0.0605)
$DSOC_{i,k}^2(\hat{\beta}_2)$	0.0948** (0.0054)	0.0958** (0.0043)	0.0949** (0.0046)	0.0949** (0.0044)	0.1583** (0.0074)
$TC_k(\hat{\beta}_3)$	-0.0123** (0.0032)		-0.0132** (0.0034)		
$PTPC_{i,k}(\hat{\beta}_4)$		0.0017 (0.0018)	0.0013 (0.0017)		
R-square	0.7939	0.7862	0.7923	0.7859	0.5300
Joint F-test [†]	158.8**	175.8**	127.3**	253.0**	8877.2**
Obs.	1,099	1,082	1,082	1,082	1,082

Notes.

*significant at the 5 per cent level and.

**significant at the 1 per cent level. Robust standard errors in parenthesis. [†] These are joint significance F-tests for (1)–(4) and Wald test Chi-square statistic for (5).

6. Conclusion and policy implications

Fraud in the form of overreporting of employment outcomes is pervasive among PTPs in the Bangladeshi skills sector. At the same time, many training programmes fare poorly in improving productivity and incomes, while employers lament the lack of skilled workers and the high turnover of their workforce. The evidence and analysis in this paper indicate that the limited success of many skills programmes might originate in demand-side problems. Ironically, the very incentives that are provided to training providers to identify and respond to market demand can result in fraud in the form of a differential overreporting of outcomes that hides the source of the problem. This is because training providers servicing low-capability firms have no way of enhancing their demand for trainees by changing their training model. Even if they start with good intentions, many are likely to find that the only way they can recover their costs is to overreport placements.

This type of fraud cannot be successfully addressed using monitoring and enforcement alone. Even in a relatively small programme like Sudokkho, a management team implementing a ‘zero tolerance of corruption’ found it hard to stay on top of the fraud and the different strategies for covering it up. Moreover, in a programme answerable to a foreign development partner, the obvious response to the detection of fraud is simply to cancel contracts. However, this does not address the problem because any other PTP appointed in that area will have strong incentives to behave in the same way. Fraud in this context is a response to deeper problems.

Without identifying and addressing the demand side problems, detection and punishment strategies have the added danger of creating strong incentives for other parties to hide the problem. As we saw in SEIP, if instances of fraud are widespread, even non-corrupt programme managers turn a blind eye to all but the most egregious cases simply to save their programmes from closure. When fraud is widespread because many PTPs are unable to recover their costs in honest ways, top-down enforcement based on detection and punishment by programme managers cannot root out the problem. Some programme managers may begin to take a tolerant view and collude to hide poor results. Persistent poor returns on the huge investments in skills training is the true cost of the corruption.

If our hypothesis is correct, an effective response that reduces corruption and improves skills training outcomes must combine at least the following elements. First, it must include policy to

improve the organisational capabilities of low-capability firms that are potential employers. This is essential to generate effective demand for trainees at a wage that reflects the cost of the training. Secondly, the training quality of PTPs must be appropriate for higher capability firms if these are target firms. This combination of conditions will remove the compulsion for PTPs located near clusters of low-capability or very high-capability firms to engage in fraud. More importantly, real demand for trained workers can also create effective checks between firms and PTPs that can be described as ‘horizontal checks’, further reducing opportunities of corruption and fraud (Khan & Roy, 2022).

The non-linear relationship between firm capabilities on the demand side and the propensity to misreport identified in our empirical analysis supports this hypothesis. Our evidence also shows that there are significant variations in the organisational capabilities of firms within a single sector and country. We believe that investments to improve organisational capabilities are commercially feasible and need to be organised in a joined-up way by development partners or governments. This may be the most useful contribution that development partners and governments can make to reduce the fraud problems that have bedevilled the skills sector. The case of Bangladeshi garment manufacturer JMS Holdings Ltd demonstrates the commercial feasibility of such an approach (DEG., 2016).

Between 2012 and 2014, JMS engaged in a programme that combined investments in skills with a capacity expansion plan and support for organisational capability development partially financed by loans from the German investment corporation (DEG). JMS is one of the larger and higher-capability garments manufacturing groups in Bangladesh, with a total employment of around 6,300 workers. Like most Bangladeshi garment manufacturers, it suffered from low labour productivity and competitiveness. The programme engaged a Turkish textile consulting company, Gherzi, to assist with skills training and organisational development. The upgrading included a firm-level skills training programme and an organisational restructuring of production lines. The total investment was US\$1.5 million, of which US\$820,000 was invested in skills upgrading.

Within two years of the programme, productivity increased by 37 per cent and capacity by 74 per cent, the quality and unit value of products improved, input wastage declined, profits increased, and the loan from DEG was repaid. According to Gherzi consultants, roughly one third of the productivity growth was attributable to the skills programme, and the remaining two thirds to the ‘optimization of the production layout’ and new equipment (DEG., 2016). However, new equipment played a minor role as the consultants also state that ‘the most important productivity lever is the optimization of production layout, followed by the training of employees, and *lastly* the usage of new machines’ (DEG., 2016, p.7, emphasis ours).⁶ However, these figures should not be understood as additively separable effects. Without the investment in organisational change, the productivity growth attributed to skills may not have been realised, because the capacity of a firm to use skills depends on its organisational capabilities.

The analysis and evidence presented here are not just important for anti-corruption policy, but also for designing effective skills strategies. An effective skills strategy should create incentives for PTPs to meet market demand, but also ensure that the demand exists. Most importantly, programme governance cannot rely on vertical monitoring alone. Strong horizontal checks are also required across actors with the power and the self-interest to ensure that other actors are following rules that deliver the desired outcome. For lower to mid-capability firms, this means it is necessary to have an investment strategy for raising their organisational capabilities. For higher capability firms, it is necessary to upgrade the quality of training by PTPs, including the provision of bespoke in-house training.¹⁰ Both are necessary to create effective demand and horizontal checks from employers on training providers. The evidence and analysis presented suggests that policymakers could design such joint interventions in experimental trials and scale up strategies that work in that context.

Notes

1. <https://www.worldbank.org/en/topic/skillsdevelopment#3> (accessed 10 April 2023).
2. While Hossain and Mahmood (2018) do not use the term organisational capabilities, they find that turnover rates vary with a firm's position in the value chain (contractors or sub-contractors), its ability to enforce and comply with standards and regulations, the wage rates employees earn, proximity to industrial clusters, and provision of in-house training; all of which correlate with a firm's organisational capabilities.
3. Dávid-Barrett and Fazekas (2020) observe a similar adaptation of fraudulent and corrupt behaviour following attempts of enforcement.
4. This set of indicators roughly aligns with dimensions linked to total factor productivity of Bangladeshi firms identified by Fernandes (2008).
5. Indeed, dropping the squared term reveals a negative relationship between the propensity to misreport and Alliance Accord compliance which is significant at the 5 per cent level (not reported here).
6. JMS was a relatively high-capability firm to begin with, and the strategy adopted with support from the DEG cannot necessarily serve as an immediate blueprint for the very heterogeneous Bangladeshi garments industry. The policy goal must be to help firms graduate from basic organisational capabilities towards intermediate and then advanced capabilities (Khan, 2019a).

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Ethics statement

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Data availability statement

The data used in this study includes personal identifiers and has been shared with the research team in confidence. An anonymised aggregate version of key indicators which can be used to replicate baseline results is made available in the Supplementary Materials.

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Appendix

Table A1. List of variables and data sources

Variable	Source	Level	No. Obs.
Propensity to misreport index $PM_{i,constant}$			
Share of total invoices red-flagged (in %)	PTP data Sudokkho	PTP	12
Demand side organisational capability index $DSOC_{j,k}$			
Relative unit value of exports O_{1j}	See Eq. (2)		
Dollar value of exports	National Board of Revenue	Factory	176
Weight of their exports	National Board of Revenue	Factory	176
Alliance and Accord O_{2j}	Alliance and Accord	Factory	176
Type of firm O_{3j}	National Board of Revenue	Factory	176
PTP capability index			
CBT Level (levels 0 to 5)	PTP data Sudokkho	PTP	11
Experience Staff (in years)	PTP data Sudokkho	PTP	11
Training Staff (% staff who completed training)	PTP data Sudokkho	PTP	11
Student-Staff Ratio	Derived as (b)/(a)		
(a) Number of trainers per PTP	PTP data Sudokkho	PTP	11
(b) Number of trainees per batch per PTP	Trainee data Sudokkho	Trainee	1,082
Trainee Capability index			
Education (re-coded, see Table S3)	Trainee data Sudokkho	Trainee	1,099
Monthly earnings (max over 6 months)	Trainee data Sudokkho	Trainee	1,099
Instrument			
Distance between factory and PTP (in meters)	Average distance by 'geosphere'		
Location PTP	PTP data Sudokkho, Google maps		11
Location Factory	National Board of Revenue, Mapped in Bangladesh, Google maps		139