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Skills, Employment and Productivity in the Garments and Construction Sectors in Bangladesh and elsewhere

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Abbreviations

ATDC	Apparel Training and Design Centre (India)
BBW	Benefits for Business and Workers
CITI	Clothing Industry Training Institute (Sri Lanka)
DFID	Department for International Development (UK)
GIPC	Garment Industry Productivity Centre (Cambodia)
JAAF	Joint Apparel Association Forum (Sri Lanka)
MFA	Multi-Fibre Agreement
NCSU	North Carolina State University (USA)
OPM	Oxford Policy Management
P.A.C.E.	Personal Advancement and Careers Enhancement
RMG	Ready-Made Garment
RPL	Recognition of Prior Learning
SMART	Skills for Manufacturing of Apparels through Research and Training
SME	Small- to Medium-sized Enterprise
TTSC	Textile Training and Service Centre (Sri Lanka)
TVET	Technical and Vocational Education and Training
VTP	Vocational and Training Providers

1 Introduction/Overview

Query: A desk review of existing research on skills, employment and productivity, especially in the ready-made garments and construction sectors in Bangladesh and also more widely in South Asia and South East Asia. When discussing the links between skills and productivity, we would like to understand the impact and implications both for the individuals, as well as the firm that employs the individual.

South Asia and South East Asia are two regions where there has been a proliferation in export-orientated ready-made garment (RMG) factories as well as increased construction to meet the demand for expanding populations. These jobs require skills, but there are often not enough skilled workers in the labour market to meet this growing demand (UNDP 2014). Theory suggests that training frontline workers in low-income settings might have large potential given pre-existing low levels of skills (Adhvaryu et. al. 2016a). Yet empirical research on initiatives to develop skills is scant, with the majority of findings emanating from Western countries. Little is known about whether and how skills should be improved, and the consequences on productivity.

An inadequacy of skills among manager and workers could be a constraining factor to productivity and competitiveness. This report will not be investigating productivity gains from greater work intensity which, when based on long hours and excessive overtime, can both compromise workplace safety and health, and create disincentives to adopt such measures as technological and process innovations that can propel viable productivity improvements (Huynh 2015). I use the definition of productivity as being the ratio between output and inputs. This could be measured by labour efficiency, which is a comparison of the time spent working productively to the total time spent at work such as the number of garments produced by a line of sewing machine operators in a specific time frame.

Increasing labour productivity is not only key to improving a firm's competitiveness, it is widely acknowledged as the key to improving the well-being of workers and their families. There are some indications that increases in labour productivity allow payments to workers—wages—to rise. With increasing productivity and wages come rising living standards (USAID 2005). This report will investigate the financial and non-financial impacts to workers engaging in skills development initiatives.

This paper will analyse the consequences of effective training and firm support schemes on productivity and their impacts on workers. The first half is on the RMG sector, where I scrutinise the effects of skills development on retention and productivity levels. I then explore classroom training versus practical 'on-the-job' training leads to the best results, and how successful TVET institutions have been. The next section is on the commitment of factories and government towards skills development. I then examine efforts to target direct supervisors and middle management—both groups experiencing a lack of skills. There is some discussion about the differential impacts of training depending on the size of the firm. Forging partnerships across the value chain and the sector is then discussed before a brief overview of training content. The last two sections review the implications on workers as well as spillover effects on co-workers, families and wider networks. There is some evidence that training uptake and implications vary due to culture, gender, caste, migrant status and other such factors—this is explored in the last sub-section.

The second section on construction is a lot shorter, which is suggestive of the lack of literature on this sector. This was noted by various papers, particularly about the lack of in-depth understanding of skills requested by businesses [see, for example, Adi and Ni'am (2012), ILO (2015a) and Riaz et. al. 2015)]. Empirical research on skills development in this industry is urgently needed.

2 Ready-Made Garment (RMG) Industry

> "*The most effective and lowest-cost strategy for raising labour productivity and quality in Cambodia's garment factories is training to address Cambodia's weaknesses in professional development, production controls and engineering, and organization of work*" (USAID 2005 p. viii).

The Multi-Fibre Agreement (MFA) governed the world trade of RMGs from 1974 to 2004, imposing quotas on the amount developing countries could export to developed countries. Since its dismantling, competition between developing countries has increased yet skills have not matched the growing demand for increasingly sophisticated products. In Cambodia, for example, often factories have no separate training budgets and no defined training programme. The few programmes that exist do not have a basis in scientific training principles; rather an assumption is made that time will allow operators to attain the necessary skills (USAID 2005). Similarly, in India, training provided by factories and skills training in the private institutes is "woefully inadequate" (Mezzadri and Srivastava 2015 p. 142). These approaches perpetuate poor methods, and is detrimental to productivity. Poorer productivity levels implies negative implications on wages (Adhikari and Yamamoto 2008).

A lack of skills development is surprisingly, given constant technological upgrades. This predicted to continue in the future; modern technology such as automated cutting and Computer Aided Design will increase the demand for skilled workers knowledgeable in operating new machines and in computer software (Chang et. al. 2016). Promoting these skills increases productivity, which can lead to increasingly sophisticated and profitable exports (USAID 2005, Razzaue and Eusuf 2007, UNDP Cambodia 2009, World Bank 2012). While there are initial costs, companies are able to make returns quickly due to greater efficiency and productivity—an obvious interest to buyers (OPM 2014).

2.1 Breaking free from Equilibrium Traps: Improving Retention and Productivity

The willingness of firms to provide general training to workers depends on the productivity gains from training and the likelihood that workers are retained (Adhvaryu et. al. 2016a). The RMG sector is stuck in a low equilibrium trap with worker dissatisfaction driving high worker turnover, which in turn drives low investment in workforce skills upgrading, training and productivity. Firms want to improve labour productivity, but are afraid of losing their return on investment because of high staff turnover (World Bank 2012, ILO 2016). There are plenty of other employment opportunities for well-qualified and hard-working RMG workers, so it is easy to change contractors or employers. De Neve (2014a) finds that within a booming labour market that is perennially short of skilled labour, experienced workers know they have a lot of leverage—whenever they are happy with their current conditions, they simply move on to the next-door company or contractor.

As a result of poor retention, managers and supervisors are faced with a daily battle simply to ensure that there are enough people sitting on the lines. Factories tend to hire anyone, without looking at skills, ability or motivation. The recruitment, done in a hurry, skips the basics of induction—workers disorientated and not trained to the levels required of the business, feel extreme pressure, do not earn as much as the can or wish and eventually leave. Those who stay are not given any idea of how they can progress (Impactt 2011). These trends negatively affect productivity and technology adaptation (Chang et. al. 2016).

However, by providing training, the low equilibrium trap is disrupted—employees benefit from increased job satisfaction which improves retention rates and productivity. DBL estimate that it takes up to one month of full day training before newly hired workers reach full productivity. During this period, newly hired workers receive training from more advanced colleagues, which additionally binds resources that would otherwise be used for productive tasks. Hence, the cost of replacing and training a new worker are significant meaning that high retention rates are crucial from a business perspective (KfW DEG 2015). By increasing productivity, DBL is able to produce and sell more and higher priced pieces per day, hence fostering its market position and improving it in the medium term. This in turn secures the jobs of the 21,000 workers currently employed by DBL. This again will allow employers to pay higher wages, which will gradually improve the living conditions of their workers (See Section 2.8).

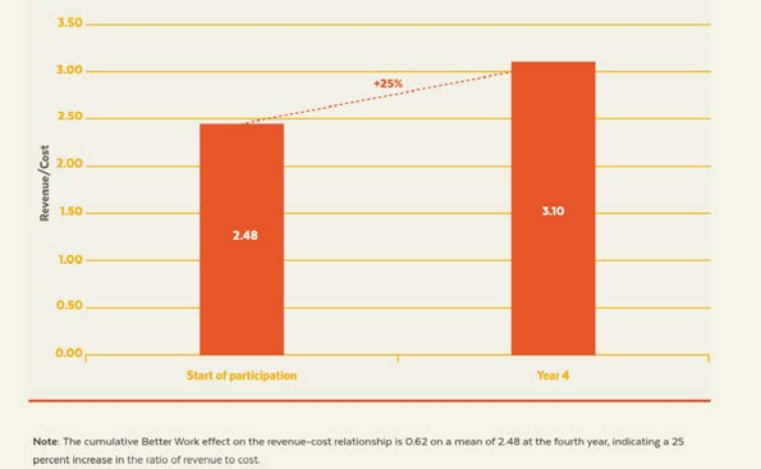
Examples of where training improved retention and productivity are listed below and in Box 1.

- Retention levels in the Personal Advancement and Career Enhancement (P.A.C.E.) programme improved dramatically: there was a 66 percent, 49 percent and 9 percent greater retention among female P.A.C.E. participants compared to female non-participants in the year after the programme finished in Cambodia, India and Vietnam respectively (Nanda et. al. 2013).
- The separate training station introduced by JPS Holdings Ltd. increased specialisation among the operators. This helped boost retention, as employees who excel at operating a specific machine could not easily transfer their know-how to other companies. JPS also found that ensuring career transitions are possible between production and non-production departments, and facilitating such transitions through specific training courses, was critical to improving retention rates and the career prospects of production staff (KfW DEG 2016).
- Higher retention of female RMG workers in Bengaluru, India, was noted during an on-the-job training programme on soft skills development although the difference disappears after training is complete (Adhvaryu et. al. 2016a).[1] Trainees have higher number of culmulative person days accrued to the firm, are more productive and within-team spillovers in productivity and task complexity are substantial, with most of the impacts on productivity accruing after programme completion. Net return for RMG workers is large—about 250 percent nine months after programme completion. In addition they observe sizable spillover effects on labour supply and productivity for non-trainees who frequently worked closely with workers who have received training.
- Adhvaryu et. al. (2016b) conducted a randomized control trial that studied the direct and indirect spillover impacts of a skills training programme aimed at empowering low-skilled female labourers in India. The goal of this 80-hour programme was to improve time management, communication, problem-solving and financial literacy skills. They find positive impacts on retention, attendance, productivity and promotion rates, even nine months after programme completion. Also, untrained workers on treatment lines had more cumulative person days compared to control workers (on control lines) during the programme. They are also more productive and are assigned more complex operations. These impacts are nearly as large as the direct impacts of treatment.[2] Using actual costing data, the authors estimated a large return on investment—over 170 percent by the end of the programme period, and 4-5 times this amount by the end of the 9-month post-programme tracking period.
- ILO (2016a) found that the Supervisory Skills Training as part of the Better Work programme reduced injury rates as well as instances of unbalanced lines

[1] Soft skills include effective allocation of time and money, teamwork, leadership, relationship management, and acquiring and assimilating information.
[2] This suggests that the soft skills learned by trainees were communicated to workers on their production lines, which helped to transfer improved outcomes of non-participants as well.

(work piling up and workers sitting idle). These two factors related in lowering the time to reach production targets, resulting in a 22 percent increase in productivity. This effect was driven by female supervisors. In Vietnam, workers who report taking part in the training reach production targets on average nearly 15 minutes faster than those who had not had the opportunity to participate (ILO 2016b). After four years in Better Work Vietnam, the average factory's revenue-to-cost ratio increased by 25 percent (see Figure 1).

Figure 1: Better work impact on profitability



Source: ILO (2016b)

- Maitra and Mani (2012) analyse the impacts from a subsidized vocational education programme offered to disadvantaged women in New Delhi. In the short term, they find that trainees were more likely to be employed and on average work 10 hours more per week compared to the control group. The programme was "highly cost effective" and there are "considerable gains" from replicating the programme (Maitra and Mani 2012, p. 1).
- Macchiavello et. al. (2014) in a study in Bangladesh note that retention rates are slightly lower for females assigned to training than males. Promotion rates are higher for male trainees than for female trainees and there are no significant differences between male and female trainees with regard to line level efficiency, absenteeism or quality defects. Female trainees perform insignificantly better for efficiency and absenteeism, and insignificantly worse on quality defects. The cost of training is returned in 24 months on average or 12 months among those promoted, suggesting a "reasonable rate of return to the training" (p. 16).
- Impactt (2011), based on a case study in a factory in Tiruppur, India, has shown that the balancing of lines is better when the human resources, industrial engineering and production team worker together to assess the skills of workers and when there are inputs on productivity improvement and industrial engineering training. Impactt and Rajesh Bheda Consulting have worked with the factory to train operators on quality assurance through zero defect. Before the operators would wait up to an hour to have their garments checked, but now they are able to check the garments themselves. With the time that they save, each operator produces another 1-2 pieces per hour, which means both an increase in production (and in workers' salaries).

Box 1: Disrupting Low Equilibrium Traps through skills development training

The Benefits for Business and Workers Programme 2011-2013 aims to develop a virtuous circle of competitive Indian and Bangladeshi businesses with skilled, well paid, safe and loyal workforces producing excellent RMGs. The programme was supported by Arcadia Group, Marks and Spencer, Mothercare, New Look, Sainsbury's, Tesco, Ralph Lauren and Varner Group. All 73 participating factories made financial contributions and the programme benefitted from matched funding from DFID's Responsible and Accountable Garment Sector Challenge Fund.

Working with Rajesh Bheda Consulting, Impactt developed a six-month training course for participating factories, training key workers in problem solving and decision making techniques, and upping their skills in human resource management, communications, production and quality management. In Bangladesh, a health and safety module was added. Training largely involves practical exercises, role play and story-telling, linked strongly with topics and key learning points. Factories are invited to come to the Impactt and Rajesh Bheda Consulting offices at any time to discuss issues. The results can be found in the below table:

	India	Bangladesh
Efficiency improvement (%)	26.25	18.28
Cut-to-ship ratio improvement (%)	1.38	1.14
Six-month return on initial investment		21
Absenteeism reduction (%)	26.73	33.67
Worker turnover	26.08	52.16
Monthly Take-home pay % increase	5.09	7.63
Hourly pay % change	7.99	11.94
% decrease of workers working 60+ hours per week	(unknown)	43.48

Notes: Cut-to-ship ratio means the output from a given input

Source: figures from Hurst (2013)

The table above shows significant cost saving for factories, and reductions in absenteeism and turnover together with higher wages and fewer hours at work suggests that job satisfaction is higher (see Section 2.8). If training can run in conjunction to changes to workers' financial benefit package (such as attendance bonus, production bonus and zero defect incentive) then this can amplify the positive effects of training.

These examples show the positive impacts that training initiatives bring. There were only a very small select group of studies that pointed to more negative effects. One notable example was by Raihan and Shonchoy (forthcoming) who note that the RMG training programme targeted towards migrants increased employment in the formal sector but was less successful in securing jobs specifically within the RMG sector. Male migrants were thought to use their connections to move out of the RMG sector once settled in the urban area.

2.2 How training is delivered

There was some debate in the literature about whether on-site or off-site skills development training is more effective. Firms are generally more reluctant to send their existing workforce offsite for skills-upgrading citing opportunity costs and logistical expenses, as well as the fear of losing workers to other factories (see World Bank 2012 for Laos PDR). In general, empirical evidence shows that industry-based training, with or without classroom-based training, has resulted in the most favourable outcomes. For example:

- Training led by Impactt and Rajesh Bheda Consulting in India and Bangladesh: deemed "extremely practical" (p. 14)—the in-factory setting was perceived to enable participants to experiment with line setting, interact with workers, make changes and see effect. This made it easier for workers to implement what they learnt. Furthermore, training engineers, managers and supervisors from different factories together in groups was positive, encouraging peer-to-peer learning, experience sharing and encouraging lagging factories to improve—the example of successful peers proved to be a strong incentive (Hurst 2013).[3]
- The Garment Industry Productivity Center Project in Cambodia: the practical factory-based exercises proved to be one of the most important factors in the project's success. Many trainees sent to the Garment Industry Productivity Center were poorly educated and had difficulty grasping theoretical concepts but with the assistance of Khmer speaking technicians showed aptitude for learning by doing. When they grasped the ideas and the purpose, the trainees were tenacious if allowed to practice their skills in the factory (USAID 2009).
- Chittagong-based JMS Holdings Ltd. in Bangladesh introduced a separate training station, which included a training production line. After a 21-week course covering a mixture of theoretical and mostly practical exercises, new recruits reach the requisite efficiency level to be integrated into the production lines. Introducing a separate training station did not hamper the actual production process and running costs were offset through higher volume and quality of production. For example programme graduates produced at a higher efficiency, averaging 60 percent vs. the 54 percent for non-trainees. Enabling refresher training allowed continuous improvements to techniques and processes. The net benefit of the programme for JMS was USD150,000 per year. Structures were well-established and sustainable, with teachers, curricula and a functioning workshop all in place (KfW DEG 2016).

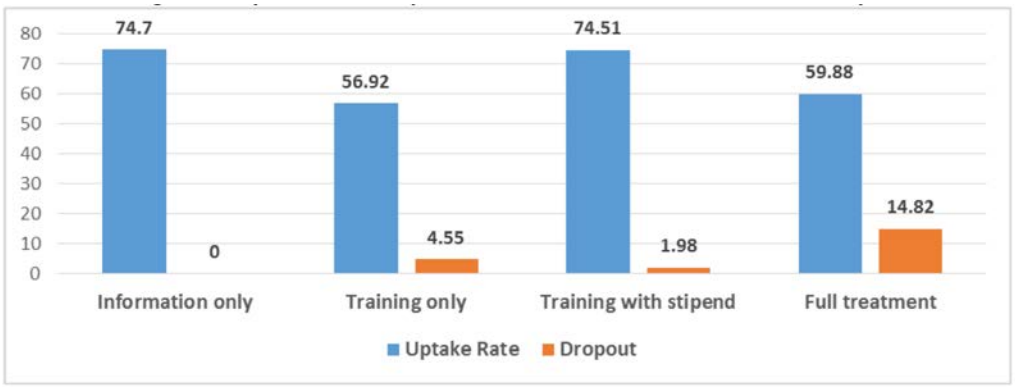
If RMG companies do not have the necessary in-house expertise to develop human resource capacity, using external Technical and Vocational Education and Training (TVET) providers might be the only option. However various issues have been noted with these. For instance the Cambodia Garment Training Centre in Cambodia has struggled to attract middle management trainees and in turning out industrially competent supervisors and operators (USAID 2005). Furthermore, it is largely focused on teaching women to sew and reducing injury and downtime rather than on driving productivity improvements and upgrading to broader functions and higher value-adding activities (Rasiah 2009). In Bangladesh, there is a very weak link between government-provided TVET institutions and RMG factories, resulting in slow and inadequate responses to labour market developments (UNDP 2014, Kashem et. al. 2011 in Raihan and Shonchoy, forthcoming). A thorough assessment of the training needs of RMG factory managers, supervisors and operators needs to occur, which creates industry demand for skills development initiatives. In Sri Lanka, the Clothing Industry Training Institution is one of the main TVET organizations that provides training externally but there are concerns over the institution's ability to provide high quality and industry relevant training courses. A course can cost between USD55-110 per worker and manufacturers claim that the standards have not met their expectations (ILO 2001). However more recent evidence suggests that Sri Lanka has made progress in the quality of training and education in RMG (see Box 2).

[3] Inviting managers from previous batches to share experiences and give practical and real-life examples of success has also been proven to work (see Impactt 2013).

Box 2: Sri Lanka's success in creating linkages with industry

In contrast to many other countries in the region, Sri Lanka has a highly skilled workforce. This can be attributed to a good general education system that is free through the university level and specific education and training facilities for the apparel and textile sectors at different levels, including university degrees in technical capabilities and design. An innovative training publication pioneered by the industry in 2007 helped education providers in the country align their courses with the needs of the RMG industry. Entitled "Competence and Beyond" it mapped all the key job roles in the industry, articulating the skills, standards and knowledge areas relating to each job role so that job descriptions can be standardized across the entire industry as well as bridge the gap between current and future skill requirements (Wijayasiri and Dissanayake 2008). Thus, there are also workers available with technical as well as design capabilities. These skills and capabilities allow firms to offer more services to buyers (Lopez-Acevedo and Robertson 2012). However, there is limited availability of workers in the RMG sector—the perception of poor working conditions prompts workers to seek employment in other sectors. This is a possibility in middle-income countries where standards of education are higher (Lopez-Acevedo and Robertson 2016).

To test the different modalities of training, Shonchoy (2016) provided four different variations to eligible participants in an randomised control trial with poor rural households in northwest Bangladesh: (1) Day-long job-related information session; (2) One-month long residential skill training; (3) Month-long residential training with financial stipend for migration and forgone income; and (4) Same as (3) with one month paid internship (on-the-job training) in Dhaka (full treatment). He finds that uptake rates are highest for (1) and (3). Of the individuals that decided to participate in the programme, a small percentage of them did not continue with the training and hence dropped out. Reasons noted for dropping out include local seasonal labour demand, backwardness, social taboo and patriarchy.[4] Women are likely to experience a lower dropout rate if the training that can fit around their domestic and childcare duties.



Source: Shonchoy (2016)

Based on 6-month follow-up survey data, employability was much higher in on-the-job training compared to other treatment interventions. Compared to the control group, those undergoing the on-the-job training were 45.19 percent more likely to be employed in the RMG sector once training had finished, suggesting the importance of bridging the gap between industry demand and training. Providing an internship with RMG producers provided an exposure to a job-related network.

2.3 Factory and Government Commitment to achieve results

Factory owners often think that employees will terminate their contract once a training course has finished (Fukunishi 2014). Some want to see the training done before workers entered the job market which removes the burden of cost and commitment of time from

[4] These findings emanate from a policy brief, with more detailed analysis and findings due to February 2017 (Shonchoy, personal communication).

the employer (USAID 2009). Yet evidence suggests that the retention rate of trainees is reasonably high, meaning that long-term investments through skills and leadership training are likely to offer win-win scenarios for both workers and firms (see Naeem and Woodruff 2015). Evidence from Cambodia suggests that improving production skills is less costly and while some trained personnel leave it is still considered worthwhile (USAID 2009).

Once factory owners and managers see the positive results from skills development programmes being implemented by competitors, they are more likely to want to roll it out in their own business. Sonobe et. al. (2011) finds that in Vietnam, after a successful training course on managerial skills, participants and nonparticipants become much more willing to pay for future courses than before. Participants even had increased willingness to pay for the onsite trainings which they had not experienced yet.

In Cambodia, factories were initially sceptical of having a Garment Industry Productivity Centre (GIPC). Factory managers were not eager to invest time or money in unproven methods offered by more foreign experts, and even more cautious in accepting Cambodians as trainers and consultants. To overcome that hurdle, GIPC began its activities with an eight-month pilot programme, engaging four factories in classroom instruction followed by in-factory application. The training curriculum involved manageable courses (2-3 weeks, part time) to minimise the time that employees were away from production duties. At the conclusion, three of the four factories completed the programme and each had measurable improvements—as much as 30 percent—in production efficiency. By raising factory productivity, the Center also added more than USD13 million to the Cambodian economy. To publicise these results, GIPC attracted managers from 50 factories and 30 stakeholders from government and interested organisations and donors to a conference (USAID 2009). Once factories have seen the impacts on productivity in their competitors, they are more likely to invest effort and resources to skills development.

Studies across the region show that the factories which are more open to change and are committed to improving basic production techniques and managerial disciplines are more likely to achieve results (USAID 2005, Hurst 2013). For instance, in Cambodia, those who committed to implementing skills development systems often experienced rapid productivity gains of greater than 20 percent (USAID 2009). Likewise, in Bangladesh, factories which attended all the training sessions, updated their action plans and proactively contacted trainers for support if they faced problems were more successful than less engaged factories, particularly in terms of increases in pay per hour, cut-to-ship and efficiency.[5] (Hurst 2013). A personally engaged and committed general manager is particularly crucial (USAID 2009). For example, in Better's Works Supervisory Skills Training, managerial support of training is associated with increased supervisor confidence. Supervisors who believe their manager supports the training have more confidence in their ability to carry out their job effectively (ILO 2016a).

Increments to productivity are not the result of committed efforts from factories along but are also a product of the wider enabling environment. An example to illustrate the importance of government policy comes from Sri Lanka where skill development are a key component (National Stakeholders 2014 in Lopez-Acevedo and Robertson 2016). In 2002, Sri Lanka's main RMG industry players and the government developed the Five-Year Strategy to face the MFA phase-out. The government allocated SL 100 million to increase productivity in the apparel sector through the five-year strategy, which included setting up the Joint Apparel Association Forum (JAAF). The JAAF consolidated industry associations and enabled an industrywide response to challenges posed by the MFA phase-out (Wijayasiri and Dissanayake 2008). Measures taken by JAAF's human resource development subcommittee include (see Lopez-Acevedo and Robertson 2012):

[5] Factories were more likely to be engaged in the programme if they have a stable, long-term relationship with their buyer.

1 Create design capabilities: to offer a variety of textile and clothing degrees, and extension courses for people employed in the RMG sector, at the Department of Textile and Clothing Technology, University of Moratuwa, with support from UNESCO and in collaboration with the University of Leeds and the University of Manchester. Also, in collaboration with the Royal Melbourne Institute of Technology, the Brandix College of Clothing Technology was launched, offering training programmes up to degree level in RMG to develop leadership skills and knowledge of RMG technology (Wijayasiri and Dissanayake 2008).
2 Strengthen marketing capabilities: JAAF in collaboration with the Chartered Institute of Marketing (CIM-UK) initiated an industry-specific professional marketing qualification. Apparel marketers are strengthening the linkages between local manufacturers and local buyers.
3 Improve in-firm productivity: In 2004, JAAF initiated the Productivity Improvement Programme to provide leaner and more effective organizations, which would result in higher productivity, lower costs, better quality, and on-time delivery (Wijayasiri and Dissanayake 2008).
4 Develop technical competence: In 2004 JAAF entered into an agreement with the North Carolina State University (NCSU) College of Textiles to deliver a NCSU-affiliated diploma in collaboration with the Clothing Industry Training Institute (CITI) and the Textile Training and Service Centre (TTSC). CITI and TTSC built an alliance with NCSU to raise their training programmes to world-class standards with a focus on technical competence, supply chain development, management and industrial engineering.

Recently, the Indian government has made more effort at leading and coordinating skills development. For example, in 2010 The Ministry of Textiles announced a major government-led skill development programme, the "Integrated Skill Development Scheme" and in 2014 a Ministry of Skill Development and Entrepreneurship was created to consolidate all training programmes. The pan-Indian Apparel Training and Design Centre (ATDC) has come to play a key role in the provision of skills training for the apparel sector and currently runs over 200 training centres across India. Following the introduction of this scheme, ATDC developed a flagship training brand called SMART (Skills for Manufacturing of Apparels through Research and Training) which aimed to enhance the provision of skills training at the lower rungs of industrial employment to supply a thriving RMG sector with a skilled labour force. Under SMART, fast-tracked vocational training courses of 1 to 4-months were introduced to teach basic shop-floor skills to newcomers to the apparel industry. SMART also uses skill camps to enhance the industrial employability of the rural poor, of women, and of low caste people. However the number of workers enrolled on such training courses remains low.

In contrast to Sri Lanka and India, government coordination of the RMG sector in Bangladesh has seen less success. A National Skill Policy was adopted in 2011 but, overall, policies to enhance skills are not coordinated. Instead, a variety of skill enhancement 'on-the-job' training programmes are in place that are centred on industry associations whose activities and policies are uncoordinated (UNCTAD 2014). There needs to be strong government leadership to ensure enhanced productivity that other countries in the region have experienced.

2.4 Importance of training middle management and direct supervisors

As demands to be efficient, from both labour and environment perspectives increase, qualified personnel are needed to guide these required changes (Chang et. al. 2016). Yet skills gaps in management, technical and fashion skills—such as pattern masters, product developers, designers, textile engineers, production managers or merchandising and marketing professionals—have been noted across South and South-East Asia (USAID 2005, Frederick and Staritz 2012, Lopez-Acevedo and Robertson 2012, Yusuf 2013, Chang et. al. 2016). Weak capability of midlevel managers results in poor engineering and a poor

understanding of optimal workflow. Managers are often unaware that proper implementation of controls, planning and engineering can have a strong, positive effect on productivity and the efficiency of operations. Middle management requires significant on-the-job and on-line training to understand management techniques (USAID 2005, Technopak 2013, Woodruff 2014, KfW DEG 2015, KfW DEG 2016).

Talented middle management is also needed for sustainability and diversification of production and upgrading to higher-value products and activities. This can have positive effects on efficiency. For instance, KfW DEG (2015) found that supplementary training for middle management triggers productivity gains as a consequence from improved leadership. Over the medium- and long-term, this approach would allow movement up the value chain, supplying more sophisticated (and therefore profitable) RMG products and offer higher value-added services, such as research and product design. An econometric analysis of the determinants of labour productivity in Cambodia suggests that management variables, such as the relative importance of middle management, are as important as advanced technology use in determining factories' labour productivity (USAID 2005). Skills development as part of a clear career development plan can encourage recruitment and retention of middle managers (UNDP Pakistan 2009).

One suggested method to fill the void in middle management positions would be to fill these positions with foreigners. This has been a particular strategy in Cambodia where around 5,000 Chinese apparel technicians and supervisors have been dispatched to apparel factories through Chinese human resource agencies (Natsuda et. al. 2009). These foreign workers have brought experience, which was critical for the rapid establishment of the RMG sector; however, they may now pose a challenge to upgrading and productivity improvements because of their limited training and technical skills in production processes or industrial engineering, outdated and unsuitable management practices. Also, cultural and communication barriers between foreigners and Cambodian workers are obstructing knowledge transfer with negative impacts on productivity (Nathan Associates 2007, USAID 2009). In addition, employing expatriates in supervisory and management positions is a significant cost; salaries are often much higher than Cambodians working at the same level and foreigners receive generous benefit packages (USAID 2008).[6]

Direct supervisors that manage over production lines have also been noted as a group that needs skills development. In their study of 60 RMG factories in Bangladesh, Macchiavello et. al. (2014) indicated that only 15 percent of line supervisors report having received any formal training for the positions, either inside or outside the factory, and the majority of this training was provided inside the factory. Direct supervisors play a key role in RMG factories—not only overseeing the quality and quantity of work produced, but also in labour relations. Direct supervisors, however, are often promoted as a result of their skills as an operator but in their new position they must meet managers' demands and motivate their line of workers in a high-pressure environment. Without training, they may struggle to motivate workers in an effective and humane way while dealing with pressure from managers to meet production quotas (Babbit 2016). In addition, supervisors in foreign-invested RMG factories (for example, a Korean supplier establishing operations in Vietnam) frequently communicate with those of different nationalities which can add an additional layer of complexity (ILO 2016a).

Examples of the benefits of training direct supervisors are as follows:

- Adhvaryu et. al. (2016b) found that lines supervised by higher quality managers (those better at identifying and solving production issues in general, and those who specifically monitor production more frequently and are more likely to replace underperforming workers) are more productive and exhibit more frequent reallocation of workers across tasks.

[6] USAID (2008) find, however, that management costs are higher in companies that employ the fewest foreigners, suggesting that other factors apart from nationality are at play.

- A randomized control trial of Better Work's Supervisory Skills Training took place to measure the impact of the soft and tactical skills that were taught during training. The programme improves supervisor confidence. However this is only the case if they believe that the training will have a positive impact on their ability, knowledge and skills. Supervisors who initially felt a high level of power in the factory see their confidence diminish with training in the short term. This could be evidence of supervisors' confidence being shaken by the realization of the knowledge they lacked. Yet, overall, training supervisors reduced their turnover. In addition, turnover among workers supervised by women decreased in the presence of a female supervisor (ILO 2016a).

Carswell and De Neve (forthcoming) argue that is more about the low status of direct supervisors within the factory which results in low retention, even if there are skills development initiatives. They note that in India supervisors are the lowest rung of management, but earn well below what tailors make in a month. At one level, a supervisor is much less central to the production process than a tailor, whose work can result in either the rejection of an order or a successful repeat order. While supervisors are central to a smooth production process, "it is nevertheless clear who rules the production line" (p. 24). Supervisors know their limitations too and realise that any faux pas can turn them into an instant topic of ridicule and humiliation on the shop floor for their lack of technical skills and know-how (De Neve 2014a). Their lack of career mobility results in many of them frequently moving between factories and often out of work altogether (Carswell and De Neve, forthcoming).

There are a few studies in the literature that compare the impacts of training direct versus indirect training (see Box 3 below).

Box 3: The Impacts of Training on direct vs. indirect supervisors

A randomized-experimental impact evaluation study of 173 supervisors in four RMG factories in Cambodia found that the training improved workers' perceptions of relationships with their supervisors and led to moderate improvements in overall firm productivity. However, these results varied depending on the management level of the supervisor trained.

To improve the "soft" dimensions of the work environment (such as job satisfaction and day-to-day management) training direct supervisors rather than indirect supervisors mattered most. This seems plausible, since direct supervisors are the people who interact with workers on a daily basis. The positive effects of worker job satisfaction from training direct supervisors are reinforced and stronger if the indirect supervisors are also trained. There are two possible explanations for this: firstly, it allows workers to become more aware of the improved productivity and in turn enjoy their job more; and secondly, direct supervisors have more leeway to implement the changes learned in the training if their direct boss also approves of them.

In contrast, for "hard" dimensions such as improved production timelines and communication about deadlines and target outputs, training the indirect supervisor mattered most. The effect is smaller immediately after training but grows stronger starting in month three. Indirect supervisors are responsible for setting work targets and overtime hours, so it is unsurprising that training these supervisors has led to this result. Employees whose indirect supervisors were trained report less overtime. While this constitutes a cost saving for the firm in the short term, it represents a reduction in pay for the workers. Yet these cost savings could be crucial in ensuring the competitiveness of the factory itself, and with it, job security for the workers. Researchers did not find a significant impact of direct supervisor training on any of the productivity and production measures.

Source: IFC (2009)

Informal labour contractors increasingly recruit workers for managers, as De Neve (2014a) finds in the South Indian RMG industry. After recruitment the task is to act somewhat as a direct supervisor; getting operators to work at such a speed and skill that the contract is completed on time and according to quality standards. Practical tailoring skills and technical knowledge, as well as knowledge of companies, employers, and the 'tricks of the

trade' are needed. Contractors are a source of skills acquisition, but often find themselves "trapped" between middle-management and the workforce. The informal nature of their work renders them vulnerable and they struggle to progress in their careers. Often there is shifting around from being employed as a tailor and a contractor, caused by fluctuating rates, delayed payments, and irregular work flows. (De Neve 2014a). This demonstrates that contractor's trajectories do not follow a linear conception of skills acquisition and upwards career mobility. There is limited evidence on the skills that informal labour contractors possess in the literature.

2.5 Small and Medium Enterprises vs. Large Firms

Regardless of the type of skills development implemented, larger factories appear to perform better across all productivity indicators post-training. For example, in Bangladesh, cut-to-ship increased by 2.33 percent at large factories compared to 0.73 percent at small factories. In Vietnam and Pakistan, Sonobe et. al. (2011) and UNDP Pakistan (2009) respectively find that the larger the employment size, the more likely that owners participate in the training programme. With higher volumes in larger firms the financial impact of cut-to-ship improvements is significant, meaning that production teams are incentivised to continue to pour resources into productivity improvements (Hurst 2013). SMEs on the other hand do not have the funds to cover the service fee and stipends to trainees and cannot spare machines and space. With fewer staff to train, there is less impact of training on SMEs.

There is evidence to suggest that the needs of firms vary according to their size. For example, in Laos PDR, training on "merchandizing and production tracking" were identified as top priorities for managers across all firms sizes, large firms prioritized training on social compliance, medium-sized firms were more likely to prioritise training on information technology for their managers (World Bank 2012) while "marketing and sales" was a top priority for SMEs (see Section 2.8).

SMEs generally have less sophisticated human resource systems. In India, factories with the least sophisticated human resource systems made the biggest gains in reducing absenteeism and turnover (32 percent and 52 percent respectively). However these factories did not achieve improvements in pay. This is likely to reflect the level of skill and commitment which human resource teams need to bring about pay improvements compared to absenteeism and turnover incentives which require less change to factory systems. This demonstrates the link between the development of management capacity and the potential to increase wages to retain better skilled and more productive workers (Hurst 2013) (see Section 2.8).

2.6 Skills Development and Partnerships across Multiple Actors

Developing skills across the value chain was rarely mentioned in the literature, but where it has happened there have been positive results. In Bangladesh, JMS Holdings Ltd. supports the development of its suppliers through skills transfer: the purchasers invite pre-selected suppliers to the JMS production site, and explain to them the quality requirements of JMS's clients and the quality-testing procedures. Once delivery has begun, JMS continuously interacts with the suppliers if the fabric falls short of the necessary quality standards; and it offers them solutions to fix the underlying problems. The purchasers also regularly visit the suppliers' production facilities to provide support. Ensuring a systematic supply-chain management system that identifies key issues (and includes them in supplier training), provides incentives for suppliers to engage in training. Systematic monitoring of supplier's results has been vital for achieving sustainable improvements (KfW DEG 2016).

Working with suppliers on skills management is cost effective. JMS's support for local suppliers has no directly related costs as the knowledge transfer is mainly on an ad-hoc basis and is part of the purchasers' daily job. In return, by supporting its local suppliers,

JMS is able to broaden its supplier base and to become less dependent on Chinese suppliers. The biggest advantage, however, was the decrease of 20 days in lead time, as it takes about 22 days to ship fabric from China to Chittagong. Being able to deliver quickly is a big competitive advantage in the fast-moving RMG industry—particularly for the European market, where Turkish producers have a significant geographical advantage (KfW DEG 2016).

Forging partnerships across the sector has also been given as a reason for programme success. An example is the Personal Advancement and Careers Enhancement (P.A.C.E.) programme which provides life skills education and technical training for female RMG workers in India, Cambodia, Vietnam, Bangladesh and China. Funded by Gap Inc., P.A.C.E. has collaborated with various implementing partners (Swasti Health Research Centre, CARE and RMG factories) as well as with ICRW which provided content guidance, technical support and evaluation services. Engagement with multiple stakeholders ensures buy-in and ownership (Nanda et. al. 2013).

2.7 Content of training

There was some evidence of effective ways to deliver training. Examples include:

- Menzel (2015) provides evidence of the positive effects of organizational learning—the sharing of knowledge among co-workers in firms. In three Bangladesh RMG factories, randomly selected workers were instructed by their supervisors to share production knowledge when one worker started producing a garment that the other had already produced. The intervention increased the productivity of the later workers during the first one or two days they produce the garment, before their productivity reached its long-run level again. There is some evidence that the effect was stronger if the workers sharing knowledge were socially connected. Furthermore, compliance by the factories in implementing the intervention was higher if the later workers that should receive the knowledge were younger. Older chiefs sometimes invoke resistance against receiving the briefings.
- KAIZEN enables managers and workers to identify and solve problems hindering production improvement and encourages them to continue challenging increasingly difficult problems.[7] By nature, KAIZEN activities—such as keeping major tools or raw materials in designated places, segregating raw materials and scraps clearly, cleaning the floor in the workshops frequently and holding meetings with all workers—are relatively simple, not costly and, hence, quick to be implemented. The authors argued that this was the reason for positive impacts of training on many of KAIZEN activities even in the short-run (Sonobe et. al. 2011). In other words, staff had identified their own needs and requested training to be delivered on these.
- There is quite a lot of examples of training on soft skills. The theory is that marginal productivity rises, both through direct channels to the extent that soft skills are used in production, and indirect channels, if workers were more likely to ask for and receive additional training in hard skills (Adhvaryu et. al. 2016a).
- Local language and culture workbooks and exercises are useful in an environment with poor levels of basic education (UNDP Pakistan 2009, USAID 2009).
- Positive results are associated with flexible skills development courses. USAID (2009) found that in Cambodia, the original curriculum was reduced and courses were adjusted based on client response; new courses were added as needs were discovered. As Cambodian technical staff expanded their range and confidence, more sophisticated courses were added.

[7] KAIZEN is a Japanese business philosophy of continuous improvement of working practices and personal efficiency.

- IFC and ILO (2015) report on the different training courses offered as part of the ILO's Better Work programme in Cambodia, Haiti, Jordan, Vietnam, Indonesia, Nicaragua and Bangladesh. Figure 2 shows that a strong majority of respondents thought that the training course content was relevant to their job. For Worker Induction Training of Trainers for Human Resources Managers, Workplace Cooperation and Supervisory Skills Training courses more than 60 percent of participants' state that the information provided was excellent. The only course where "average" as a grading for the course information surpasses 20 percent is the Human Resources training. No-one taking the Supervisory Skills Training survey replied negatively. This is important given the relevance and influence of this course on both managerial as well as operational decisions. Only the programme on Workplace Cooperation has a somewhat (close to 10 percent) unfavourable opinion of the effects of the training.

Figure 2: ILO's Better Work Programme: "The content of the course was relevant for my job"

Source: IFC and ILO (2015)

2.8 Impacts on Employees

Wages are notoriously low in the RMG sector. For example, 43 percent of workers spoken to in five Asian countries reported their current wages are not sufficient to meet their family's basic needs (Impactt 2011). Developing skills is usually welcomed by workers as there is the potential for increased wages that can contribute to poverty alleviation. Indeed, in the Tamil Nadu RMG industry in India wages can be high once skills are acquired (Carswell 2012, Carswell and De Neve 2014). Many of the workforce as young and female who are at a critical life cycle stage for the development of life-long skills and skill development will also allow for vertical mobility for some workers. Focusing on skills training on this particular demographic taps into an important driver for long term economic growth and poverty reduction (Kuttner 2008).

Paying above average wages and providing a safe working environment that is characterised by a respectful and inclusive treatment of employees directly improves workers' productivity by improving workers' health and reducing absenteeism. It also increases job satisfaction and hence employee retention (KfW DEG 2015). These examples point to how training programmes had a positive impact on wages:

- Factories that underwent the Benefits for Business and Workers Programme (BBW) were paid significantly more than non-BBW factories, in Bangladesh, 25 percent more per month (Impactt 2011). Bangladeshi Workers have been able to take home an average of 6 percent more pay whilst working 22 percent fewer hours—wages increased more rapidly by piece rate factories (producing sweaters) because improvements in production efficiency directly impacted

workers' ability to produce more pieces per hour. In India, the factories that introduced attendance and productivity bonuses positively impacted upon pay per hour (Impactt 2011, Hurst 2013).[8] Skills matrices and appraisals allows for workers' rewards to increase as their skills develop.

- For JMS in Bangladesh, the setting up of the separate training station resulted in a higher salary for workers based on higher production efficiency. Their compensation consists of a basic salary, as prescribed through the national minimum wage, plus an efficiency bonus based on their daily performance. Jobs are being secured due to JMS's increased competitiveness.
- In Cambodia, workers trained by GIPC reported growth in income and responsibility. Independent surveys of trainees conducted 3-6 months after training found that 45 percent received promotions or raises and credited GIPC training for their progress (USAID 2009).
- Maitra and Mani (2012) observe that many female trainees reported that the primary reason for applying to the programme was to increase future earnings. Data after the training is consistent with this aim. Women who were offered the training earn almost as twice as much in the post-training period than those not offered the training and the more training classes attended, the higher the monthly wage earnings is likely to be. Women who receive training were more likely to own a sewing machine—12 percent of women who received the training report that they are likely to stitch for others and charge money for it. This is particularly true for scheduled castes and for women who belong to low dependency ratio households. This shows that there are enhanced entrepreneurial opportunities for trainees, which have the potential to augment household income.
- In India, factories that implemented all the training recommendations from Impactt's Benefits for Business and Workers Programme achieved excellent results, particularly in pay. These factories saw an increase of 26 percent in take home pay and 19 percent in pay per hour (Hurst 2013).

Less positive findings are provided by some authors, however. Adhvaryu et. al. (2016a) find that the impact of soft-skills training on female RMG workers in Bengaluru, India, was that wages increased marginally by 0.5 percent. While this was small, and shows that the firm captures most of the gains from the increased marginal productivity of labour, treated workers are more likely to expect to be promoted within six months after training. Another example is provided by Carswell and De Neve (forthcoming) who note that female RMG workers have less flexibility, less extensive social networks and fewer transport options to move around, which results in them earning well below what a similarly skilled male tailor on a regular company payroll makes. Macchiavello et. al. (2014) state that wage rates in the sector depend very heavily on worker grade, so that entry-level supervisors are likely to earn the same amount regardless of their productivity, and to have the same increase in salary regardless of their productivity either as an operator or a supervisor.

For workers who have received increased wages as a result of upskilling there is evidence to suggest that some have been able to save. For example, UNDP Pakistan (2009) state that more than three quarters of the operators reported an increase in the family saving. In India, a randomized control trial found that savings were particularly earmarked for children's education (Adhvaryu et. al. 2016b). Likewise, Adhvaryu et. al. (2016a) remark that treated workers were more likely to be saving for their own or their children's education and have higher aspirations for children's educational attainment. This was linked to improved resource management, particularly financial literacy and forward-looking behaviour. Raihan and Shonchoy (forthcoming) find that savings acquired are used

[8] However, in neither country did wages approach current estimates of living wage. Nevertheless the project was successful in putting more money into workers' pockets, both in comparison to the amount they received earlier, and in comparison to other equivalent factories.

to smooth consumption, particularly during seasonal famines. During shocks, participants draw on savings instead of taking out high interest loans and getting into debt.

There is also quite a bit of evidence that skills development is linked to improved confidence levels. Before training, male trainees are often more confident than females about their own abilities (Macchiavello et. al. 2015, Woodruff et. al. 2015). Yet after training Woodruff et. al. (2015) finds that this difference was less pronounced because of an increase in female self-confidence. Even after the six- to eight- week trial period where trainees put their skills into practice, there is no significant difference between female and male self-assessments of their ability relative to the typical supervisor. Also, when asked if they would accept a promotion, female trainees were just as ambitious as male trainees—another measure of confidence. Presumably over time, with more role models in the position, women would start with higher levels of self-confidence (Macchiavello et. al. 2015). UNDP Pakistan (2009) discovers that acquiring skills and contributing to the family income enhanced self-esteem and confidence at work. Condor et. al. (2008) has shown that increased confidence levels allows women to bargain for better work conditions and pay, indicating positive indirect effects. Lastly, Maitra and Mani (2012) find that the training encouraged trainees to venture out of their home and search for a job, although not necessarily one that relates to stitching and tailoring. This is particularly true for women who have prior experience in stitching and tailoring.

Trainees are also more like to exhibit greater acquisition and use of information: they are more likely to avail themselves of skill development initiatives at the firm, state-sponsored pension and subsidized health care. This has spillover effects: workers who interact with treated workers are more likely to avail of government subsidized healthcare and social insurance and provident fund, enabling them to access government benefits for themselves and their families (see Adhvaryu et. al. 2016a, 2016b). Workers report increased satisfaction when they have access to these types of benefits (Impactt 2011). Higher job satisfaction leads to greater retention, which leads to less costs for training and higher productivity (KfW DEG 2015).

Further studies point to the wider benefits to non-trainees. For example Adhvaryu et. al. (2016b) find sizable spillover effects on career advancement for non-trainees who frequently work closely with workers who have received training. Several months after a 3-day Supervisory Skills Training course as part of the ILO's Better Work programme, supervisors were more likely to listen to their workers' concerns regularly, with this effect being magnified when supervisors perceive that they have their manager's support. Supervisors not only gained confidence in their skills, but also changed the most positively in terms of holding viewpoints consistent with humane labour management (ILO 2016a). This is likely to have beneficial impacts on workers wellbeing.

Woodruff et. al. (2015) observe that there were no clear differences in line practices or operator well-being (such as happiness and stress) on lines supervised by male and female trainees, but communication about personal lives between supervisors and operators seemed to occur more frequently between supervisors and operators of the same gender. Given that most of the supervisors are male, and most of the operators are female, women are much less likely to speak with their supervisors. Other spillover effects include perceptions of female supervisors (who have been trained by the project) improving substantially, even in the short term (Macchiavello et. al. 2015, Woodruff et. al. 2015), suggesting that after prolonged exposure to a new supervisor, operators' assessments were no longer influenced by pre-existing, general perceptions of female ability (Woodruff et. al. 2015).[9] Operators even noted that female supervisors are better at teaching, communicating with management, giving orders and correcting mistakes. However promoting more female supervisors can demotivate males.

[9] Attitudes toward ability of the female supervisors are changed only with direct exposure, implying that each line needs to be exposed to female supervision before beliefs about women's skills are increased.

Raihan and Shonchoy (forthcoming) find that remittances sent from migrants who have undergone a training programme is used to increase land and non-land assets of their original household. In particular households have invested in livestock, particularly poultry. However participant origin households did not enjoy higher incomes in the short run compared to non-participant households. This could be due to remittance flow being invested in rural income generating activities without a better income source, except for livestock. Another reason is that training participants could not send significant amounts of money due to the high cost of living in an urban area.

Benefits of training programmes do not necessarily have to be monetary but can include enhanced standard of living and increased consumption levels. For example, results from the Gender Promotion in Garment Sector through Skills Development programme suggest more than 80 percent of operators now enjoy an improved standard of living (UNDP Pakistan 2009). Raihan and Shonchoy (forthcoming) find that a total of 88 percent of participants feel that they have a better standard of living after the training compared to before. This is due to increased consumption: the average monthly expenditure for participant migrants is Tk. 3086.66 compared to Tk. 2609.29 for non-participant migrants (see Table 1).

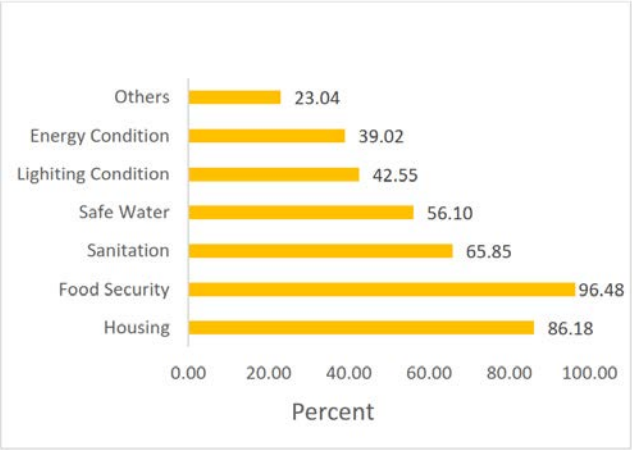
Table 1: Average household per capita consumption expenditure (monthly in TAKA) after graduating from DFID's "Reducing extreme poor by skills development on garments"

	Migrant	Non-migrant
Total	2990.715	1545.121
Participant	3086.662	1545.012
Non-participant	2609.295	1545.383

Source: Raihan and Shonchoy (forthcoming)

Increased consumption is mainly driven by food consumption and housing condition, as shown in Figure 3. Some 93 percent of respondents felt that living standards would continue to improve in the future.

Figure 3: Sectors of improvement after graduating from "Reducing extreme poor by skills development on garments"



Source: Raihan and Shonchoy (forthcoming)

2.9 Culture, Gender and Demography

The type of trainee can influence uptake of skills development initiatives and the impact they have. Gender has been a widely researched variable in this regard. Woodruff et. al. (2015) noted that a large number of females in Bangladesh chose on their own not to continue with the programme after the skills assessment day. Maitra and Mani (2012) discover that 55 percent of all women assigned to the treatment group were programme completers, with the rest often dropping out at the start. Women who have completed secondary school are more likely to complete the training programme, being more likely to internalise the benefits of training. Macchiavello et. al. (2014) find a non-trivial amount of compliance in their study on training for operators to become supervisors. Factories most often reported that these workers either had decided they did not want to attend, or their families had said they could not attend. However, the family was most likely to intervene in the case of female trainees. However, for those who did attend, attendance was very high for men and women.

Research from Pakistan suggests that women's mobility is curtailed, which limits her accessibility to skills development initiatives. While males have at least the opportunity to learn stitching skills in the apprentice system in their neighbourhoods, females have no such opportunity as they cannot easily walk around in public and because their access to formal training institutes is limited. Satellite Training Units have provided transport to overcome women's mobility and safety issues. Providing transportation service means extra costs to firms but supervisors found positive effects; the pick-up services ensures all workers come to work on time and such services attract skilled women workers (UNDP Pakistan 2009). In India Maitra and Mani (2012) and Raihan and Shonchoy (forthcoming) have argued for training centres to be close to the households of workers—those who live further away are more likely to not complete the programme.

Men (especially younger men), in contrast, do not experience the same social barriers and are more able to participate in skills development initiatives. Sonobe et. al. (2011) finds that it is younger male owners who tend to participate in classroom training on knitwear garments in Vietnam. Younger owners also attend training more regularly. It could be due to the lower opportunity cost for these younger owners or simply because they are more eager to learn given their longer expected horizon. Carswell and De Neve (forthcoming) find that even after training on basic tailoring skills, most men were insufficiently skilled to be employed as tailors and so remained as helpers. While men in their late teens could accept this, men in their twenties and thirties could neither afford to live on the pay of a helper nor, more importantly, face the humiliation of having to assist tailors half their age.[10] This could be a reason why older men do not attend training, as they do not see the short-term benefits.

Opportunities for promotion as a result of attending skills development courses are differentiated for women and men. Carswell and De Neve (2013) and Carswell and De Neve (forthcoming) find that those with skills are not necessarily promoted to more secure, higher status and better-paid jobs. While access to skills and opportunities for power table tailoring are abundant women remain helpers for years and may not move on to tailoring at all. This is because when employed as tailors, women find it harder to take time off nor can they refuse overtime work when an urgent order has to be finished. Moreover, given their domestic duties, which may entail regular time off to look after children or relatives, women are unable to offer employers and contractors the flexibility usually demanded of tailors. As a result, many of them, especially those with smaller children, move to the less skilled job of "checking" work.[11]

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[10] Men in their mid-twenties and older quickly lose the respect of peers and family, and risk seriously denting their marital prospects if they do not demonstrate an ability to 'move up' in the local labour hierarchy and display entrepreneurial qualities. Skills are necessary for upward social and economic mobility.

[11] Not all women's employment pathways are the same, however. For instance, divorced women have no option but to do higher paid skilled work, given the importance of income within their one-earner household.

Using a gendered lens, Woodruff et. al. (2015) contacted trainees after they finished their trial as supervisor to see if they have been promoted. Though the proportion of females officially promoted to supervisor positions through this training programme may seem low at 16 percent, this represents a 37 percent increase from the estimated population of 33 female supervisors in 2013 to 45 in 2014. Moreover, relative to those promoted, more than twice as many female trainees continued to work as a supervisor or assistant. If these women are ultimately promoted, this would represent a doubling of the female supervisory contingent in these factories.

Macchiavello et. al. (2014), Macchiavello et. al. (2015) and Woodruff et. al. (2015) are all papers comparing the perceptions of female supervisors with the reality by providing a training programme aimed at promoting operators to supervisors. Factory employees in Bangladesh believe that females lack the skills to become effective supervisors, especially in understanding machines and organising resources. Production floor managers had the most negative views. The groups of people that had less negative associations with female supervisors include (1) those who have past experience working with female supervisors (especially relevant for male operators); (2) production floor managers whose spouses work; (3) female operators; and (4) HR managers. However Macchiavello et. al. (2015) found that past experience working for a female supervisor has no significant effect on the perceived gap in female skills.

As Table 2 demonstrates, in reality, male and female trainees have similar skill sets (Macchiavello et. al. 2015 and Woodruff et. al. 2015). Female and male trainees showed no differences in teaching methods, literacy, knowledge of machines and RMG production, or reasoning and communication skills. However male trainees had higher numeracy scores than female trainees and were more likely to be perceived as the leader of a mixed gender group in a leadership exercise (Woodruff et. al. 2015). Macchiavello et. al. (2015) observe that when the trainees are deployed in supervisory roles, production line workers initially judge females to be significantly less effective, and detailed daily line-level production data shows that the lines on which they work are less efficient. Survey responses and exercises suggest that female trainees face some initial resistance as supervisors, which could account for the lower initial performance on the line (Macchiavello et. al. 2014, Macchiavello et. al. 2015). But after around four months of exposure, both perceptions and performance of female supervisors catch up to those of males. Female trainees are rated as equal to male trainees, by both female and male operators. Moreover, operators of either genders who are exposed to the female trainees express higher preferences for working with female supervisors.

Table 2: Trainee's actual skills before and after a six-week training programme, and after a trial as a supervisor

Trainees' Skill		Before training	After training	After trial
Reasoning		No difference	NA	NA
Numeracy		No difference	NA	NA
RMG knowledge		No difference	No difference	No difference
Leadership Skills	**Assigned position**	Males are more likely to be selected as a manager	Males are more likely to be selected to be a manager	No difference

	Comes across as leader	More males come across as the leader in mixed-gender groups	More males come across as the leader in mixed-gender groups	More males come across as the leader in mixed-gender groups
	Participation in discussion	No difference	No difference	No difference
Communication skills		No difference	No difference	No difference
Teaching skills	Teaching method	No difference	No difference	No difference
	Success rate	Males are more successful at getting the group to draw the correct drawing	No difference	No difference

Source: Adapted from Woodruff et. al. (2015)

In simulated management exercises, female trainees outperform male trainees on average but not when managing small teams that include a male operator (Macchiavello et al. 2015). However, operators were more likely to say that the male trainees were better at answering questions, at motivating and encouraging—surprising given the superior performance of female trainees in the exercise (Macchiavello et. al. 2014). Macchiavello et. al. (2014) observe that although training has a very large and significant effect on receiving a trial for both men and women: at ten months after training 93 percent of males and 76 percent of women report having been tried out as a supervisor. The difference between the two is highly statistically significant. However even with this discrepancy, with factories previously having employed so few female supervisors, 76 percent of women being tried out is arguably laudable.

While an increase in the proportion of skilled female trainees is to be lauded, this can have more negative consequences. For example male operators who are exposed to female supervisors report lower probabilities of being promoted and shorter expected tenure at the factory (Macchiavello et. al. 2014, Macchiavello et. al. 2015). “When male workers see women being promoted, they resist the female supervisors”, indicative of tensions between female trainees and operators and other supervisors (Macchiavello et. al. 2014 p. 2). With more female operators being promoted, male operators see less chances of being promoted due to a competition from a wider pool of workers (see Box 4). They also expect to work for a shorter time at the factory. Conversely, for women, providing training to enough women so that their promotion rates increase convinces other women that their career prospects have changed (Naeem and Woodruff 2015). This would ensure that women do not leave factories earlier than men and therefore are equally as qualified to be supervisors.

Box 4: Gender as an important variable in training direct supervisors

In Bangladesh, four out of every five production workers are women, while just over one in 20 supervisors is a women. Using a randomly selected comparison group, Naeem and Woodruff (2015) confront this issue by providing supervisory training to five operators (four women and one man) on sewing lines in women/light knit factories.

A local training company ran an intensive training course from November 2011 to January 2013 to 60 factories, and delivered knowledge and skills in production planning, quality control and leadership/social compliance to male and female trainees. Some trainees were promoted to be supervisors after the training, others were not. Those trainees who were promoted before the time of the first follow-up survey (four months after training) also perform significantly better than those not promoted. There was a slight indication of a negative reaction by male operators to the change, perhaps not surprising given the overwhelming majority of male operators want to be promoted to supervisor, and the new policy reduces the chance of that occurring.

There was a statistically significant difference between female and male trainees with respect to the number of hours a production line operates. The lines supervised by promoted female trainees work about a third of an hour longer than those supervised by promoted male trainees. The differences between female and male trainees with regard to production efficiency, quality defect rates and absenteeism are not statistically significant, though with regard to efficiency, males appear to perform slightly better. Both male and female trainees appear to be effective in reducing defect rates, compare with other supervisors in the factories.

The results from the management simulation exercise found that female trainees were significantly more effective in generating production than were the male trainees. Moreover, they find that the females performed best when they were matched with a pair of female operators. However they find that operators were more likely to say that the male trainees were better at answering questions, at motivating and at encouraging. Thus, even though the female trainees produced better outcomes, the workers tended to say that the males were more effective leaders.

Caste is another important identifier that influences the impact of training programmes on workers. In Tamil Nadu, India, village Matharis (the poorest and socially lowest-ranking caste of the region) are also involved in RMG work, but their involvement seems to be more recent and is still not as widespread. What continues to stop many Matharis from going to the city of Tiruppur to seek employment in RMG factories is a lack of confidence and low self-esteem—Matharis, even in their early twenties, feel that it is too late to learn new skills or move outside the village for work, and are thus stuck with whatever agricultural work is available (see Section 2.8). Lower castes who are in the industry work as village-based powerloom operators—the dominant caste had prevented transport links to the city to ensure the continuation of the powerloom industry in the village. Operators were burdened by debt accumulated over years of service. Career progression was limited to those very few who can raise sufficient capital to start a unit of their own. Carswell and De Neve (2014 p. 119) found that for the lower castes in Mannapalayam, Tamil Nadu, “there is no career to be made […]—once a powerloom operator, always a powerloom operator.”

Future prospects are brighter for the lower castes who are able to leave the village. Carswell and De Neve (forthcoming) analyse how Dalits are keen to acquire skills that enable urban employment away from oppressive rural elites. In this way skills acquisition is associated with enhanced self-esteem and economic autonomy (Carswell and De Neve 2014). Factory owners and labour contractors specify that—such is the demand for workers—that they employ whoever is capable of the job, irrespective of markers such as caste or religion. Dalits in Tiruppur, although remaining apprehensive about how co-workers view and treat them, nonetheless most feel that this does not impact upon their access to work or being promoted. In practice, people of all castes work together (De Neve, forthcoming, in Carswell and De Neve 2014).

Training programmes in cities often attract migrants’ more than local people, which is something that is explored by Raihan and Shonchoy (forthcoming) for a training programme where 80 percent of workers are migrants. This programme likely attracted

migrants because it granted a daily allowance during training which can finance the initial cost of migration such as transport and accommodation. Also it provided an organizational facility for initial migration which reduced uncertainty and stress. A total of 84 percent of these migrants who participated in the training programme became employed in the formal sector, mostly as salaried workers or in wage labour.

2.10 Lessons Learned

- Skills development costs firms money, but this money is soon repaid through greater retention and productivity. Raising awareness of the positive implications of training on productivity can encourage other employers to invest in skills development initiatives. Increments in productivity can add to a countries economy, which often stimulates interest from government.
- Skills development is most effective when it is linked with industry demand—having a placement or onsite internship service works well in this regard. The impacts of training are greatest when industry players partner with educational and training institutions.
- Training is inaccessible if it is conducted far from the workplace or at an unsuitable time—a particular consideration for women. Female trainees are less likely to take training courses due to resistance from their families. Attempts at skills development needs to appreciate religious, social and cultural restrictions imposed on women.
- Often there is the chance of promotion once skills have been acquired. Women can only take the new position if it can be flexible around their other responsibilities.
- Both soft skills and technical skills can have positive implications on firm productivity.
- The positive effects of training can spillover to co-workers and families.
- Often there is no noticeable skill difference between male and female trainees, but perceptions of their skills can vary. More positive views of women are as a consequence of trailing them as supervisors. The presence of female supervisors motivates female operators, but has the opposite effect on men.
- There are significant barriers for lower castes in gaining employment in urban areas, but once overcome is associated with enhanced self-esteem and economic autonomy.
- Factories that are more open to change and committed to improving skills see the most positive impact—a personally engaged and committed general manager is particularly crucial.
- A government established coordination body can respond to human resource and productivity challenges in the RMG sector, including enhancing design, marketing and technical competences (as in the Sri Lankan case).
- There are significant skills gaps among middle management and direct supervisors, which if addressed, can significantly benefit productivity levels.
- Larger firms perform better across productivity indicators post-training.
- Wages can increase as a result of productivity improvements linked to skills development but it is not a given in an environment if a firm captures the benefits of increased productivity. Where bonuses are linked to outputs, wages inevitably rise as skills development results in increased output. There is evidence of increased saving and consumption as a result of skills development.
- Skills development is associated with increased confidence, particularly for female workers, and higher acquisition and use of information.
- A daily training allowance equivalent to the wage rate in the local area eliminates the opportunity cost of joining a full-time training programme and increases attendance.

- Communication is greater among workers who have the same gender or are socially connected.

3 Construction

The expanding construction sector is a labour intensive industry with a preference for skilled over unskilled or semi-skilled workers (EDC 2015). Yet across the region there is a shortage of skilled construction labour to meet the high demand (UNDP 2009, FICCI (2010), Kundu 2013, ICTAD 2014, ILO 2015b).[12] In India the situation is so dire that in recent years, employers have not only been struggling to recruit skilled construction workers, but in many cases struggling to find workers of any skill calibre (Impactt 2011). In 2010 the Planning Commission projected that the Indian construction sector will require another 47 million people in the workforce by 2020, which would overwhelm the capacity of existing training institutes (FICCI 2010). The sector, already the country's second biggest employer, is still expected to create six times more jobs than IT-related sectors by 2022 (Hajela 2012). In Sri Lanka, the annual requirement of craft workers in the construction sector is estimated at 15,000 but there are 10,000 and 1,000 enrolled in the public and private sector training centres respectively, leaving a gap of 4,000.

Poor literacy, numeracy and basic sanitation standards are often listed amongst the most problematic skill gaps for employers, and has resulted in poor quality, high wastage, increased costs, inability to meet deadlines and long-term productivity decline (Alwi 2004, Alwi et. al. 2006, Jayawardena et. al. 2008, Padasalkar and Admane 2015, Riaz et. al. 2015). In India, construction workers are mostly unskilled seasonal migrants from poorer agricultural states; their lack education and formal training hampers their performance (Hajela 2012). Mark Griffiths of Leighton India noted that around half of workers had questionable literacy, an issue which can limit worker progression and seriously impact workers' health and safety since warning signs and labels cannot be read (EIU 2015). Being able to understand and interpret plans, drawings and written instructions and specifications is essential (Alwi 2004). In Sri Lanka, insufficient training has meant that they do not have the capacity to become a head mason or to undertake jobs independently (ILO 2015a).[13]

Usually construction workers pick up skills informally, either from peers or supervisors. In Sri Lanka most of the skilled workers do not possess formal qualifications and have gained their skills experimentally (Jayawardena et. al. 2008). This involved beginning as a helper and thereafter undergoing apprenticeship training under the supervision of a skilled mason. In Pakistan, the traditional system of skills development neither utilizes new technologies and work methods, nor does it absorb the benefits of research and development. Women workers are particularly affected, remaining underemployed as head load carriers or helpers all their working life (Padasalkar and Admane 2015). Using their own initiative, most Indonesian construction workers learn by trial and error, relying on both the foremen and the supervisors' ability to check and monitor quality (Alwi et. al. 2002, Alwi 2003, Alwi et. al. 2006).

An absence of a formal training system across the region has meant that it takes a longer time to acquire skills, which in turn has kept wages "incredibly low" (Padasalkar and Admane 2015 p. 2712) and there are fewer chances of promotion. For this reason many seek higher paying construction jobs in neighbouring countries in the region or in the Middle East. For example, in Bangladesh, the Bureau of Manpower, Employment and Training estimates that only 200,000 migrant construction/basic engineering workers go overseas annually, mainly to the Gulf States, Singapore and Malaysia (UNDP 2014). Emigration worsens the shortage of skilled workers and creates an upward pressure on

[12] This gap has been filled in Cambodia by filling more highly skilled construction roles—such as architects, engineers, electricians, welders and carpenters—by foreign workers (generally from Korea, Thailand or Vietnam).

[13] Those who improved their skills in the traditional manner were found to have more confidence. However, they were found not to have sufficient training in bar bending, spread of reinforcement and slab concreting, and measurements needed for concreting. Slab and vacuum tests, essential in masonry, had not been included in their training.

domestic wages leading to a situation where firms have to import workers to meet their requirements (Hajela 2012). In 2008, DLF, one of India's leading real estate developers, reportedly brought in skilled carpenters, steel fixers and electricians from China, Indonesia and Philippines as they were cheaper and more productive than their Indian counterparts (Dhall 2008 in Hajela 2012). Reliance Industries, a major Indian business conglomerate, reportedly brought in 4,000 Chinese construction workers for the construction of India's largest oil refinery at Jamnagar district in the state of Gujarat (Choudhary 2007 in Hajela 2012). Foreign workers do not speak the local language and are less aware of the culture. However, there is some limited evidence from Sri Lanka that there has been some knowledge transfer to local counterparts as part of these initiatives (Balachandra 2014).

3.1 Lack of formal skills development initiatives

There is a lack of formal training in the sector. For example, in Sri Lanka, construction-related vocations are the least popular amongst the TVET programmes, and despite efforts on the part of these centres to advocate the programme, the classes have never been fully subscribed (NPD 2014 in ILO 2015b). Alwi (2004) and Alwi (et. al. 2006) use the example of Indonesia to explain why there is this gap:

- Firstly, there are no regulations for workers to undertake training programmes before entering construction projects. Indeed, employers rarely adequately recognise skills gained from formal training, minimizing the incentive for skills development using this method (Alwi 2004).[14] This means that a huge amount of money and time spent on this is wasted. In Sri Lanka not knowing the demands of the construction labour market has put workers in an ambiguous situation (Jayawardena et. al. 2008). In India, the bulk of casual workers in the construction sector are contractual workers on daily wages, and not permanent employees at construction firms. Therefore, a medium-sized or family owned real estate firm has no clear incentive to invest in their training (Hajela 2012).
- Secondly, fees of the training programmes are normally expensive. With their limited incomes, workers find it almost impossible to join training programmes. There is no allowance from the government and contractors to assist workers. This occurs because many workers are hired on a project basis only.
- Third, due to family commitments, they prefer to develop their ability by learning from experienced workers as this allows them to continue earning a wage.
- Fourth, some contractors and clients do not demand workers to have a training certificate for employment. As long as workers' ability fulfils project standards, contractors and clients are willing to employ them (Alwi 2004, Alwi et. al. 2006). Sathyendrakajan et. al. (2008) finds that in Sri Lanka, most businesses do not provide a standard training system, and there are no proper rules and regulations governing the skills development of staff.

Another reason, mentioned in India, is that there are overly high entry qualifications to enter the construction industry which acts as an entry barrier for most casual workers. For instance, to take up the training on carpentry skills a formal school education until standard VIII, with Science as one of the subjects, is needed. Likewise, for plumbing and masonry courses, a minimum education up to class VIII is mandatory. This requirement is unsuitable for casual workers who are likely to be either less educated or school dropouts (Hajela 2012).

[14] An exception to this was found in India, where for smaller projects such as bungalows or small office buildings there is a higher demand to maintain construction quality and also have wages to match the skills input (Teli 2013).

For Indians that do meet the entry requirements, they must embark on a one-year course on basic construction skills and dedicate three years for the advanced course. However construction workers are often seasonal inter-state migrants, who work only a few months for a contractor. This suggests that there is a mismatch between the long-term duration of training offered and the short-term nature of work. To address this mismatch, the Directorate General of Employment and Training had introduced a modular employable skills scheme, which has more flexible requirements and shorter duration course (Hajela 2012). Evidence about how effective this has been is limited.

The Confederation of Real Estate Developers Association of India is an apex body in India that represents 11,500 private Real Estate developers. In 2011 it launched "Kushal", a training programme in collaboration with the National Skills Development Council. The training is a mix of classroom and on-the-job training for four weeks. The training focuses on technical as well as soft skills, and have resulted in gains to self-confidence. As a result, "wage enhancement is almost assured for all those undergoing such trainings".[15]

To build a steady supply of skilled construction workers a few large firms in the Indian construction sector have set up their own training schools. For instance, engineering firm Larsen and Toubro has set up a chain of Construction Skills Training Institutes across six Indian states. Eligibility requirements are lower and course duration is shorter. A person interested in trades like masonry or carpentry only needs to be able to read and write and the course lasts only three months. Training is delivered in six local languages and people passing from the institute are subsequently employed by the company's sub-contractors. The Construction Skills Training Institutes can train up to 8,000 people annually (Hajela 2012). Again, substantial evidence of its impact remains to be seen.

More recently a Recognition of Prior Learning (RPL) pilot in the Construction Sector was modelled under the Skill Development Initiative Scheme in India. RPL is where skills and knowledge gained by individuals outside formal learning processes are assessed and granted formal recognition. According to GoI (2015 p. 15), it is seen as a tool for delivering a fairer, more efficient, more flexible and more inclusive skills system, and it is of increasing interest to developing countries wishing to make better use of their existing human resources. Courses are available for persons having completed 5th standard and onwards. Registered Vocational and Training Providers (VTPs) then mobilized candidates who were pre-assessed. Those (few) obtaining more than 70 percent marks were earmarked to straight away appear for final assessment, whereas most candidates securing between 30 percent and 70 percent were given 120 hours bridge training by the mobilizing VTP before being considered for appearing in the final assessment. The candidates who scored less than 30 percent in pre-assessment were not enrolled in the bridge training courses. The bridge training was delivered flexibly (part time, weekends, and full time) at the construction site. Wage compensation was given to the candidates following the Director General of Training norms. Those passing the final assessment and those completing the training were issued certificates. The trained workers get the incentive of participating in competitions to test their skills at the regional, national and international level (Sundar 2016).

The preference for skilled workers was mentioned as the key motivator for construction workers to get involved in the programme, undertake RPL assessments and get certified. Almost all workers reported increased wages as a trigger for participating in the programme. In its small-sale study, the ILO (2015c) discovered that after training 92 percent of workers reported having improved attitudes towards health and safety, increased recognition in their workplace and increased confidence in their work. One such example is all workers reporting the use of safety gear/ equipment and were willing to undergo further skill training.

[15] http://credai.org/skill-development

3.2 Recommendations

As mentioned in the previous section, the impact of training interventions in the construction industry has rarely been assessed. However there are some recommendations that are expressed the most in the literature:

1 The importance of government setting skills standards and accreditation. Standards should be applied consistently across the construction industry. It is also necessary to empower training centres, vocational schools and university departments to function as a certification agency. Certification is the assessment process to gain recognition of competence and ability of a person, to meet regulatory requirements through competency testing. The purpose of certification is to provide a guarantee of skill, quality and work ability, so as to produce construction products that meet established quality standards (Cahyono 2005 in Adi and Ni'am 2012).
2 Training is more useful when it is designed to address a specific problem within an industry rather than general training initiatives (Alwi 2004, Hajela 2012). To better meet the on-site training needs it is important that training programmes are designed to be responsive to the demand for training rather than simply providing a supply mechanism to deliver pre-packaged courses in pre-determined areas of training. Training should bear a high degree of relevance to the work that tradespeople currently do, or to the work that is planned to do (Alwi et. al. 2006).
3 Establishing vocational training courses provided by educational facilities, while accreditation schemes could be set up at the tertiary level to standardise engineering in architectural courses within universities (UNDP Cambodia 2009). Incentives for students to study disciplines such as engineering and architecture could also be provided (such as the provision of living grants and university fee waivers or payments) for low-income students wishing to undertake these courses. Apprenticeship and internship schemes could also be set up to fully prepare recent graduates for the work environment as well as to give them hands on skills which are in high demand in the industry (UNDP Cambodia 2009). More broadly in South Asia, trade schools offering updated theory, accredited apprenticeships, industry incentives and student financial support have all been advocated for (see EIU 2015).

Less frequently mentioned recommendations are as follows:

- In Indonesia, Adi and Ni'am (2012) have argued that there needs to be an awareness strategy for construction labourers on the importance of having skills to improve wages and competitiveness. Awareness can be done in the form of campaigns and socialisation (Adi and Ni'am 2012).
- Alwi (2003) recommends to have regular training programmes for foremen and labourers, and educate them to understand the concept of waste so they are able to differentiate between value-adding and non-value-adding activities.
- A study of 26 SMEs in the construction industry, found that after conducting proper on-site training programmes for their construction personnel, contractors were able to reduce the direct cost of waste by up to 90 percent, with the average reduction cost around 40 percent (Alwi 2004). On-the-job training, if done in a structured and systematic way, is effective in terms of increasing productivity, improving the quality of work, avoiding wastage and reducing accidents (Alwi 2004, Padasalkar and Admane 2015).
- In India there has been a recommendation that each State government should provide incentives or tax breaks for developers or owners of buildings that have employed traditional or highly skilled crafts people during the process of construction (Teli 2013). The Malaysian government is currently offering tax exemptions to employers investing in training of workers through the Industrial Building Allowance and the Human Resource Development fund (Riaz et. al. 2015).

- In Indonesia, there need to be coordination between the Ministry of Labours, Ministry of Public Works and Construction Service and Development Board, to improve the skills of construction labourers. The Construction Service Development Board should make a foreign relations unit to accommodate the needs of construction labourers abroad (Adi and Ni'am 2012).
- Entry requirements to training courses should be lower, and the course should fit around the needs of the workers.

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