A Study of the Skills Gap along the Cotton Value Chain: Garments Segment

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1 Introduction

The cotton value chain (CVC) has a strategic importance in Pakistan, as it accounts for 8.5 percent of GDP, 46 percent of manufacturing, 61 percent of the total export earnings, and 38 percent of employment in Pakistan (Government of Pakistan, 2008, p. 39). The textile and clothing sector alone provides employment for 2.3 million people in the country (Adhikari & Weeratunge, 2006, p. 114). Moreover, the textile industry is also important because it is the second largest employer of women in Pakistan (MEDI, 2007).

In Pakistan, the cotton value chain (CVC) is very long. Raw cotton is converted into cotton lint and seed through ginning. Cotton lint is processed for the production of cotton yarn, which is, in turn, used for the manufacturing of fabrics / cloth, hosiery, apparel, canvas, tarpaulin. Cloth is further processed into dyed/printed cloth. Printed cloth is used for the manufacturing of readymade garments (RMG) and bed wear. Other textile products include terrycloth (for making highly absorbent bath towels and robes), denim (for making blue jeans), chambray (for making blue work shirts), corduroy, seersucker, cotton twill, socks, underwear, T-shirts, bed sheets, crochet and knitting items etc. Non-textile products of cotton include fishnets, coffee filters, tents, gunpowder, cotton paper (origin in China) and bookbinding. By-products of cotton include cotton seed oil, cottonseed meal (as feed for livestock) and cotton sticks (for fuel and organic matter). Cottonseed oil is highly valuable by-product of cotton. It has several distinct characteristics, being cholesterol-free, high in poly-unsaturated fats and having high levels of antioxidants (Vitamin E) which prolong its shelf life (Cotton Australia, 2007c).

The down-stream textile industry produces products like towels, tents and canvas, cotton bags, bed wear, hosiery & knitwear, and RMG. The hosiery sector is the largest sector and comprises 12,000 knitting machines with existing capacity utilization of 70 percent. The sector has tremendous potential for exports but is facing intense competition from the new members of the EU, in Eastern Europe (Government of Pakistan, 2008, p. 43). The RMG sector is the source of highest value addition along the cotton value chain. The towel sector currently has 700 towel looms whilst hand finishing garments, and embroidery are the sub-sectors of textile industry which have the greatest potential for creating jobs for women. Evidence is available that textile industry can help in enhancing the income of women to a substantial extent. For example, in a project of Mennonite Economic Development Associates (MED) launched in Pakistan, the average income of women increased from just Rs. 380/month to Rs. 1100/month (MEDI, 2007).

In parallel with other countries, it was the textile sector which played a key role in the early stage of industrialization in the UK, some parts of the North America, and East Asian countries (Adhikari & Weeratunge, 2006, p. 113) and it is also true in Pakistan. Experiences from these countries are likely to be of significant importance for Pakistan.

However, despite the fact that the CVC has strategic importance in the country in terms of its contributions towards GDP, export earnings, employment, poverty alleviation, and empowerment of women, its real potential has not yet been realized. The entire textile value chain needs to be upgraded in terms of production management, dyeing, printing and wet processing, quality stitching, line supervision,

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machinery maintenance, factory floor performance, better technology, and research and innovation (Government of Pakistan, 2008, p. 40). The Medium Term Development Framework (MTDF) 2005-10 of the Government of Pakistan also suggests *"it is necessary to move out of the 'low skills equilibrium' which traps both individuals and employers in a low expectations and low productivity environment"* (Planning Commission, 2005).

Arguably, any improvement along the CVC is expected not only to give a boost to the GDP growth, manufacturing sector and export earnings, but also to create more employment opportunities, hence, it would help in alleviating poverty in the country.

One of the key challenges in the improvement along the CVC is the low productivity which is associated with low level of skills and knowledge. The Planning Commission (2007, p. 114) believes that a serious constraint in achieving competitiveness in the international market is the low productivity in the country and without focusing on the embedded skills base, competence and productivity then the challenges of international trade cannot be achieved. It is also evident that with almost same size of workforce (2.2 million) as in Pakistan, the annual turnover of textile industry in Europe is around Euro 198 billion; much higher than total GDP of Pakistan (EURATEX, 2002). Improvement along CVC demands creativity and innovations and this will not be without investing in knowledge and skill development.

Keeping in mind the strategic importance and current dimension of CVC, a study was designed and launched in the country. The overall goal of the study was to investigate the potential for the enhancement in the knowledge and skills of the key stakeholders of the CVC so as to develop a skill building strategy for different stakeholders aimed at improvement along the chain.

The paper is organized as follows. Section 1 introduces the textile sector and the problem statement. Section 2 outlines the objectives of the study. Section 3 gives methodological considerations. Section 4 explores potential of value addition in the textile industry. Section 5 discusses relationship of knowledge gaps in the garments sector with employment, poverty, livelihood and gender development dynamics. Section 6 proposes policy recommendations for improvement in the garments sector. Last section contains relevant references.

2 Objectives of the Study

Objectives of the study included

- Analyze the cotton value chain: Inputs – practices – output; ginned cotton; yarn fabrics / cloth ; garments (RMG, bed wear, hosiery / apparel etc.); and others
- Identify key stakeholders and developing map of what??
- Study role of knowledge and skill gaps in poverty / livelihood at level of each sub-system
- Assess knowledge and skills of key stakeholders (knowledge/skill census)
- Study the existing knowledge systems
- Develop action plans

3 Methodology

The paper under review examines the garments sector which is the end of the cotton value chain. Data were collected from both primary and secondary sources for this part of the study. Secondary sources included government publications, world literature on the subject, relevant trade bodies and websites of selected garments related units operating in Pakistan. Primary sources included the sampled textile (garments) units. A semi-structured questionnaire was designed for this purpose and was pre-tested in Faisalabad. Besides, a mini-workshop was also organized in Faisalabad to further refine the questionnaire. The workshop was attended by 10 professionals working in garments sector. Data were collected by them during the last three weeks of June 2008 and first fortnight of July, 2008.

As the study is explorative in nature, and the time taken by each interview was going to take 2-3 hours, so the sample size was restricted to 15. However, only eight garments factories agreed to participate in the survey. The sampled companies had their own manufacturing units and were involved in the export business. On average, a responding garment unit had 1200 employees whilst the number of employees per manager ranged between 24 and 50 with an average of around 32. Among respondents, all small companies were reportedly registered as proprietors, and all large companies as Public Limited while 50 percent of the Medium companies as Private Limited and 50 percent as the Public Limited. Age of the responding companies ranged from just 7 years to 45 years with average of 18 years. On an average, small companies were 7 years old, medium companies 19 years and large companies 15 years. Besides, to supplement the findings of the study, several other short interviews were also arranged with people with diverse background in the textile sector – ranging from indenters, cargo professionals, researchers and textile media professionals.

4 Potential for Value Addition in Textile Industry

Pakistan has a tremendous potential for the production of value added cotton products from existing cotton production. There are several studies which provide sufficient evidence to substantiate this argument. For example, Banuri (1998) estimated that one hectare of land, on the average, produced 581 kgs of lint cotton, 1,162 kgs of cotton seeds, 500 kgs of cotton yarn, and 5801 square meters of cloth. If the same ratios are used to assess the existing potential of value addition, then one can estimate that one hectare land in 2005-06 (with yield of 714 kg cotton lint) could produce 614.46 kgs of cotton yarn and 7128.94 square meters of cloth. As during the referenced year, the total area under cotton crop in Pakistan was around 3.103 million hectares, so it can be estimated that Pakistan produced 2.215 billion kg cotton lint, from which it could manufacture 1.907 billion kg cotton yarn, and 22.121 billion square meter cloth. During 2005-06, Pakistan exported 2.634 billion square meters of cotton fabrics at the rate of US$ 0.80 / square meter. If the above potential of 22.121 billion square meters cloth is totally exported at existing rate of US$ 0.80 / square meter, then Pakistan can boost exports up to US$ 17.697 billion.

However, the question remains as to how much potential does Pakistan have for value addition in textile industry. One bale of cotton (equivalent to 227 kg) can be used to produce (Cotton Australia, 2006): 215 pairs of jeans, 250 single bed sheets, 750 shirts, 1,200 t-shirts, 2,100 pairs of boxer shorts, 3,000 nappies, 4,300 pairs of socks or 680,000 cotton balls. During 2005-06, Pakistan produced about 7074.84 million kg of cotton, equivalent to 9.76 million bales (each of 227 kg). So Pakistan with existing production can produce over 2 billion pairs of jeans, 2.44 billion single bed sheets, or 7.32 billion t-shirts. It is clear from the above statistics that CVC has substantial potential for improvement.

Vietnam plans to double its textile and clothing (T&C) exports from US$ 4.8 billion in 2005 to US$ 10 billion in 2010 and the number of people engaged in the industry from 2 million to 4 million during the corresponding period. Exports of T&C from Vietnam increased by 40 percent in 2002, 33 percent in 2003 and 9.4 percent in 2005 (Pakistan Textile Journal, 2007). These statistics clearly indicate existence of huge potential demand in the world T&C market. If this potential is exploited, it can significantly contribute towards achievement of Millennium Development Goal 1 (MDG1).

The T&C quota regime was phased out on January 01, 2005 and it was estimated that Pakistan would be second major beneficiary of this development but such predictions did not occur (Adhikari & Weeratunge, 2006, p. 117). The question is why? The answer to this question is discussed in the following sections of the report.

5 Skills Gaps and Linkages with Poverty and Livelihood

5.1 Potential for Job Creation

Textile is one of the major sources of employment and livelihood in Pakistan. It accounts for 39 percent of the employment in the country. The textile industry has tremendous potential for job creation, as is substantiated from the following arguments:

During 2006-07, the share of textile in Gross Domestic Product (GDP) was just 8.5 percent while its share in employment was 38 percent. This means that the share of all other sectors was around 91.5 percent in GDP and 62 percent in employment. So ratio of share in employment to share in GDP equals 4.47 in case of textile industry and just 0.68 in case of all other sectors. It implies that employability of the textile sector (share in employment / share in GDP) is 6.6 times more than average of all other sectors.

The share of textile in total exports has dwindled from 61.1 percent in 2006-07 to 53.8 percent during 2007-08 (July-Feb) and its share in GDP has remained static (8.5 percent) during the same period but share in employment has increased from 38 percent to 39 percent during the referenced period, which indicates that textile has more potential for creating new jobs. This phenomenon is due to the fact that the textile sector is predominantly a labour intensive industry despite the development of several technological innovations and their application in this industry (Adhikari & Weeratunge, 2006).

New investment (US$ 7 billion) in the textile industry (from 1998 to 2008) has created 454,000 new direct jobs. It infers that one million US$ investment in the textile sector creates direct job opportunities for around 65 persons. In other words, US$ 15,418 investment creates job for one person. However, acceleration in investment in the textile industry appears to be slowing down, which is evident from the statistics of import of the textile machinery.

Based on the above arguments, it is concluded that textile is a strategic sector for Pakistan and it can be used for creation of additional jobs in the country, hence contributing to the improvement in livelihoods of masses in the country. Only one percent growth in employment in the textile sector means 0.38 percent increase in employed labour force, so it can help in reducing both rural and urban poverty in the country.

5.2 Skill / Knowledge Gaps Vicious Circle

Amartya Sen, the 1998 Nobel laureate in economics believes that “capability to function” matters for the status of a person as a poor or non-poor (Todaro & Smith, 2006). Low skills-low income is a simple equation. Low skilled employees in an organization means an organization with low productivity, and low quality and low value output. It results in low competitiveness in the market leading to low returns for the firm. Such situation not only leads to low investment in HR and technology (obstruction in expansion and/or up-gradation of the existing system), but also results in low wages and low morale of employees. Low morale means low self-esteem, which is one of the three core values of development. On the other hand, low wages means lack of access to basic necessities, which is another core value of development. Lack of investment in HR and technology again means low skills/knowledge, which completes one side of the loop of low-skill poverty vicious circle. Lack of investment in HR and technology also results in creation of no or few additional jobs. It means supply and demand of labour gets imbalanced in favour of supply. Less demand and more supply puts pressure on wages. Eventually, organizations remain in the vicious circle of low productivity, low quality output and low value output. (Figure 1)

Owing to labour with low skills and knowledge, head-hunting in Pakistan is relatively a difficult task in comparison with its competitors. Consequently, the Difficulty of Hiring Index (DHI) is 78 in Pakistan, 0 in India, 11 in China and 44 in Bangladesh (World Bank, 2007, pp. 91-93). As discussed above, low returns due to low competitiveness lead to low wages, lack of demand of employees, etc. Hence, firms manage to fire employees easily, even sometimes, denying the rights to labour given under Labour Laws. Therefore, firing is easy in Pakistan when compared with India, China, and Bangladesh. This phenomenon

is evidenced from the statistics of Difficulty of Firing Index (DFI). There exists a dire need of creating awareness relating to labour rights (provided under Labour Laws) among the employees.

The initiatives of the GoP for capacity building in the textile industry seems to be mediocre, and more or less following a supply driven approach and hence, impact is yet to be witnessed. The Trade Association (TAs) are yet to take any such initiative for skill building of the concerned sector on overall basis. They still seem not to be aware of the power of information. Their efforts are concentrated in lobbying for subsidies and incentives from the GoP. At the level of the businesses themselves, there also exists a careless attitude of the owners/senior management towards capacity development amongst the employees. On the other hand, there are a few businesses like Masood Textile Mills which are aware of the importance of the learning and development. They have sufficient evidence of demonstrating impact of the training and development on the prosperity of the firm.

The study has found several knowledge gaps at the firm or business level, which are discussed below:

5.2.1 *Skill / Knowledge Gap in IT*. The first knowledge gap identified relates to Information Technology (IT). IT offers several opportunities for boosting competitiveness in the firms; it replaces people but enhances productivity; it does involve financial outlays but helps in managing several business related problems. It is also a myth that IT contributes to unemployment and poverty. In the short run, people are replaced but in the long run, more job opportunities are created due to backward linkages. Evidence of success is available in firms like Masood Textile Mills. However, the majority of the firms (respondents) remain unaware of the fruitful dividends of IT. The pace of diffusion of technology and advanced practices is also very slow primarily due to *seth* culture and the lack of capacity of the owners / top management of the firms. There exists an urgent need of capacity building of the owners and top managers. TAs and the TADP must pay attention to this issue as early as possible.

5.2.2 *Skill / Knowledge Gap in People Management.* This study has found that productivity of HR in the garments sector is quite low. Only 12.5 percent of the respondents termed productivity of people working in their organizations as excellent. People management skills seem to be totally ignored in most of the garments sector, primarily due to seth culture. The owners and top management of such organizations seem unaware of the consequences of bad organization cultures. So this emerges as one of the most important skills gap. Most of the issues related with organizational management can be attributed to poor people management skills. The existence of this issue is evidenced from the fact that around 40 percent of the respondents suggested that top management of their organizations needed training in management.

Capacity building of the companies in people management skills will not only give a big boost to the productivity of HR, but will also make the companies as vibrant entities. This will eventually, also lead to better use of ergonomics, hence not only of improving job satisfaction for the employees but their income level will also rise and dropout rate will fall considerably. This will obviously, contribute to better livelihoods.

5.2.3 *Knowledge Gap in Training and Development Practices.* A lack of training and development practices in the organization is another knowledge gap area. None of the respondents in this study reported quality of labour as excellent, which indicates that awareness of lack of skills of employees does exist among the companies. However, it appears that the owners / top management of the companies seem unable to establish a link of this problem with the need of training and development practices. Only a small number of organizations reported that such practices were on their futuristic plans. The majority of the respondent companies reportedly lacked enthusiasm in the capacity building of their employees. Due to such weaknesses in culture of learning and development, initiatives of the government relating to capacity building of the garments sector seem to be in vein.

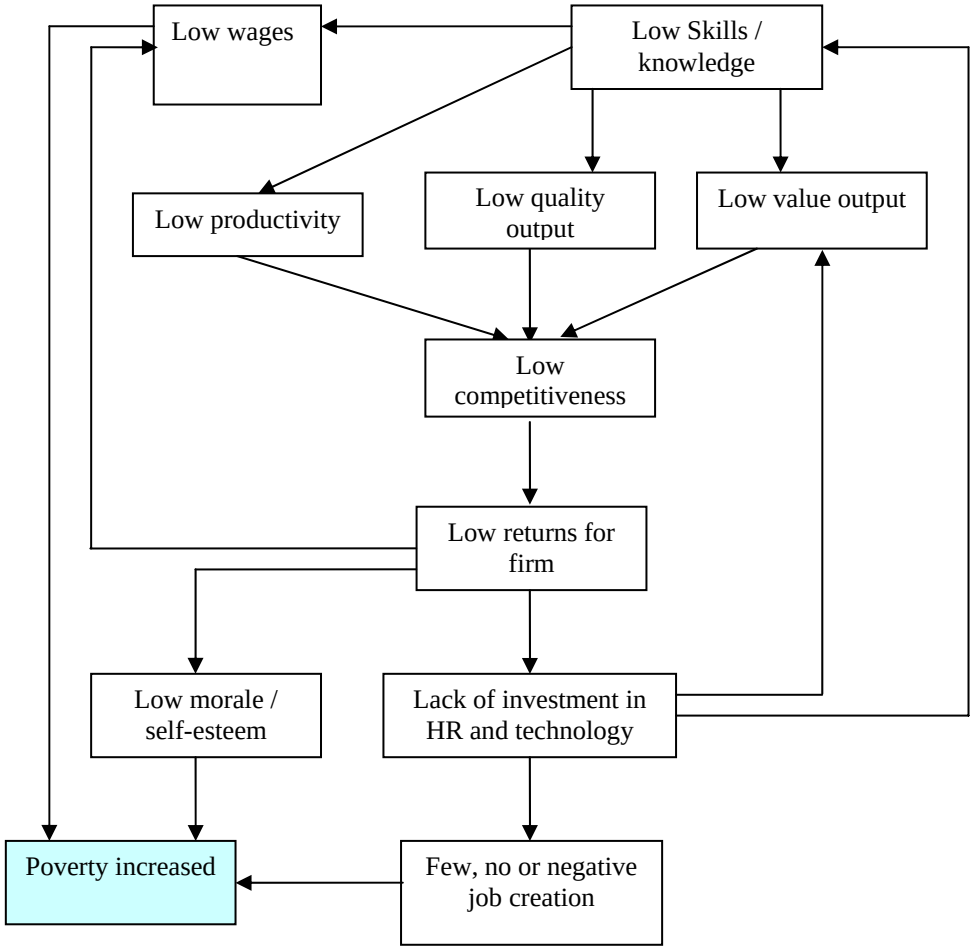

Figure 1 Skill-gap and Poverty Vicious Circle

5.2.4 *Skill / Knowledge Gap in Management of Yarn Quality.* The third knowledge gap lies in the poor management of yarn. Yarn quality is attributed with poor management of yarn inventory in the factory / firm and mismanagement at proceeding transfer points starting from farm to the spinning mill. It is clear that if the capacity of the farmers was enhanced in managing the quality of the cotton that they produce then its benefits would add value at all transfer points of CVC. Hence, every one associated with the CVC will be among the beneficiaries.

At the firm level, problems arise, when cotton yarn of one lot is mixed with other. This process damages important characteristics of the yarn and problems surface at the stage of printing/processing in the form of defects (poor shades).

5.2.5 *Skill Gap in Application of Dyes and Chemicals*. The fourth knowledge gap pertains to the poor application of dyes and chemicals. If colour is not skilfully applied on a cloth, it devalues the product and this is the most common problem in Pakistan. This is because there is acute shortage of qualified and trained dye masters in the garments sector.

5.2.6 *Skill / Knowledge Gap in Creative Designing.* The fifth knowledge gap relates to design skills. Creative designing adds substantial value to the value of garments products. A survey of garment shops in several shopping malls like Liberty Lahore, Jinnah Supper, Islamabad, and Park Tower, Karachi revealed that prices of one piece of garments with creative designs range from Rs. 2,000 to Rs. 50,000, which clearly indicates potential of value addition. Creativity in fashion and design is a major asset for gaining control over the future markets. The fact is that moving upward along the CVC, the need of knowledge, skills, creativity and innovations tends to increase. However, in this study, only 25 percent of the

respondents termed innovation in design as tool for fetching higher market price. This finding vividly illustrates the lack of knowledge and understanding of the need for innovation, So capacity development in creative design could make the garments sector more vibrant and increasingly prosperous. Obviously, this initiative will also create job opportunities as this process is more labour intensive.

5.2.7 *Skill / Knowledge Gap in Losses Management.* The study has identified eight different types of process and material losses in the garments sector which are given as follows with magnitude of losses in parenthesis: inventory losses (0.92 percent), processing losses (7.57 percent), stitching losses (3.14 percent), packing losses (1.54 percent), re-processing losses (3.6 percent), knitting losses (1.88 percent), cutting losses (5.33 percent), and rejection losses (4 percent). Such losses are mainly due to lack of capacity to effectively manage the processes. However, some successes were also reported For example, the company, Image Garments, succeeded in reducing material costs by up to 20% with an integrated system. Skill enhancement of employees in material and process management significantly contributed to the profitability of the organization. Obviously, employees with such proven skills will be more likely to have higher wages leading to improvement in their livelihood.

5.2.8 *Knowledge Gap in Marketing Management.* The study has found Marketing Management, as another key knowledge gap. As discussed earlier, marketing strategies play vital role in the success of the companies. The study reveals that most of the companies are facing severe shortage of orders, and on the other hand, the demand for products from some companies is so high that they have to turn down some orders. It clearly highlights the need for capacity building in MMS.

Another indicator of the poor performance of the existing Marketing Management System (MMS) of the companies is that exports of garments are more or less concentrated in a few markets; most predominantly the USA. If capacity of companies is enhanced in marketing management, it will enable them to diversify their markets, hence, market risks will diminish and returns will more likely to rise.

Another indicator of poor performance of existing MMS is the low Average Market Knowledge Index (AMKI). Perceived market knowledge of the companies has been found to be just 3.31 on a scale of 5, which clearly indicates substantial room for improvement. In other words, a better market knowledge would definitely translate into higher ability to explore and exploit market potential.

Lack of capacity in marketing is also visible when results relating to marketing tools in practice, are analyzed. Only 20 percent of the respondents informed that their companies had MBAs in marketing of their products and only 10 percent indicated that their staff had any formal training in marketing.

So, if MMS of companies is improved, they will be able to sell more in the international market, and fetch higher market price, eventually, this phenomenon will create a positive multiplier effect on the backward linkages resulting in the creation of additional jobs, more income and hence, improvement in the livelihoods of the masses associated with CVC.

5.2.9 *Knowledge Gap in Quality Management.* Poor quality management has emerged as another important area of knowledge / skill gap. Several sections of this report have highlighted the issue of quality. Training of top management in quality management emerged as one of the 4 most important training need areas for the top management.

5.2.10 *Knowledge Gap and Gender Development.* The textile Industry is the second largest employer of women in Pakistan. Handicrafts, garments, and embroidery are the sub-sectors of textile industry where tremendous potential exists for creating jobs for women. Similarly, in the garments sector, in some jobs like stitching, women are preferred over men. Women can do several tasks like sewing, making button holes, inserting buttons, cleaning the threads, ironing, folding, and packing etc.

So the garments sector has a strong potential for empowering women through upgrading their skills. Evidences for success are available. For example, in a project of MEDI launched in Pakistan, average income of women increased from just Rs. 380/month to Rs. 1100/month (MEDI, 2007).

Under the Stitching Machine Operators Training Scheme (SMOT) Scheme held during 2007-08, the Textile Skill Development Board (TSDB) has trained 2700 female stitching machine operators in Karachi, Faisalabad, Lahore and Rawalpindi. They are all employed in the garments sector. It is expected that such programmes will enhance earning capacity of the women in the garments sector.

It is concluded that capacity enhancement of women not only be used as a tool for poverty alleviation and gender development but also in economic development of the country.

6 Recommendations

The findings of the study offer both opportunities and threats on one hand, strength and weaknesses on the other hand for the garments sector in Pakistan. Opportunities need to be properly tracked, analyzed and appropriate strategies need to be evolved in managing threats. Strengths need to be identified and reinforced. And, weaknesses need to be properly addressed. Improvement in the CVC can be brought about by bridging the knowledge gaps as identified in *Section on* ***Skills gaps and linkages with poverty/livelihood*** and can the aid the textile industry to be a tool for poverty alleviation, improving livelihoods and gender development. There are two key areas where improvement is needed: efficiency and quality. However, some of the additional recommendations are presented below:

The garments sector needs large number of **highly qualified personnel** and related institutions must realize the gravity of situation and develop a medium term plan for catering the needs of garments sector. Government should take target-oriented initiatives for capacity building of garments manufacturing owners, managers and employees. Though, some measures have been taken by the government to build up capacity of the sector but such interventions may not yield the desired results. Unless the practices of training and development are internalized in the factories and offices, the effectiveness of such interventions would remain questionable. As Raj (2005) observes, organizations that invest resources on training and development while overlooking how such interventions could effectively contribute in the achievement of their goals, may waste resources (p. 7.1). Therefore, it is proposed that such interventions be designed in such a way that they cater to firm-specific training needs. The input-output-outcome-impact chain model should be implemented to evaluate the effectiveness of such interventions.

Labour Laws: A vast majority of the employees more particularly the women, working in the garments factories are unaware of their rights given to them by Labour Laws. Inevitably, they get exploited by the *seths* in many ways. Even the working environment is non-conducive for actually working. So, there is exists an urgent need to launch a campaign to educate the employers and the employees about existing Labour Laws. Apparently, this move would go against the interests of the business community and yet the productivity of employees is more likely to increase, as is suggested by the Principles of Ergonomics.

There is a dire need to launch **quality campaigns** for capacity building of the Ginners, Spinners, Weavers and Garments Manufacturers etc. In this connection, related associations / trade bodies like below, may be involved like Federation of Pakistan Chambers of Commerce & Industry (FPCCI); The Karachi Cotton Association; Pakistan Cotton Ginners Association; Pakistan Commercial Exporters of Towels Association; and Towel Manufacturers Association of Pakistan etc. The garments factories also need facilitation and technical assistance in achieving international certifications in quality. Certification in quality will not only boost level of confidence of importers in Pakistani garments products but will also enable the exporters in fetching higher per unit export earnings.

Branding is another vital area where urgent attention of the manufacturers and exporters is needed. In fact, branding is akin to quality and therefore, development of a “skills-set” for the garments sector whioch would include marketing strategies and branding could trigger an exponential growth in the export earnings.

Sharing of information among CVC stakeholders, horizontally and vertically, needs to be improved for catalyzing the process of improvement in the CVC.

Incentives should be given to the export-oriented manufacturers and which should be linked with quality of products measured in terms of export earnings per unit product. The government should sponsor the participation of only manufacturers (instead of only-exporters) in the international exhibitions and trade fairs.

A clear cut **pro-industry long term power policy** may be suggested. The power crisis should be overcome immediately and issue of load-shedding for the manufacturing units be properly addressed. NEPRA and OGRA should have representation from TAs / CCIs. The Government may consider providing a subsidy on gas to the garments exporters. It is suggested that a subsidy on gas should be given at the rate of 2 percent to the companies with export earnings from Rs. 1 billion to Rs. 2 billion, and at the rate of 6 percent to the firms with export earnings exceeding Rs. 2 billion.

Interest rates of banks may be rationalized and brought down to normal levels and an export refinancing facility should be provided to the exporters who are also manufacturers, according to their entitlements.

Technical knowledge data base must be prepared and be made available to the garments sector.

Integrated Operations: The cotton and textile industry in Pakistan direly needs backward and forward integration of operations. One option for improvement in value addition could be facilitating existing integrated textile units to extend the process of integration downwards, right up to farm level. Moreover, this would help in bridging communication gap between farmers and the ultimate users. This would help in improving efficiency and quality as well.

Collaborations with foreign companies: The Board of Investment should closely work with textile firms in the country for developing partnerships with foreign companies equipped with advanced technology. Partnership could be any form like joint ventures, franchise system, input or technology supplies, marketing etc.

Creating diversity in markets: Pakistani textile products lack exposure to diversified markets. Currently, exports concentrate on few markets. For Pakistani products, USA is the biggest market. In 2005-06, Pakistan exported US$ 4.19 billion worth of products to USA alone, of which cotton and textile products accounted for 88 percent. The share of Pakistan goods in the US textile market rose from 3 percent in 1995 to 5 percent in 2002 while that in European Union fell from 5 percent to 4 percent during corresponding period (Nordas, 2004). After 2002, share of Pakistan goods in the US textile market fell to 2.96 percent in 2004 but by 2006 some improvement had occurred with the share rising to 3.4 percent. However, recent statistics for the months of March and April, 2007 suggest that in March, Pakistani textile exports to USA fell by 12.5 percent and in April by 4.9 percent. (US Census Bureau, 2007)

Central Cotton Research Institute could be upgraded into Cotton and Textile Research Institute (CTRI), and should be assigned the role of research and development relating to all sectors of cotton, textile and clothing. The revenue collected under the Cotton Tax could be given to the CTRI for meeting the funding requirements of the research. The proposed CTRI should have strong linkages and partnership programmes with other related institutions as well like Agriculture Universities, the Textile University, farmers and industry etc. Resource generation for CTRI can be easily made. The first possible source is the Cotton Cess. During 2005-06, Government of Pakistan collected Rs. 240 million under the head of Cotton Cess (APTMA, 2008). A second source could be the R&D facility currently being extended to the textile exporters.

SBP in 2005 offered **R&D support** to the textile garments exporters, at the rate of 6% of the FOB value of the exports to EU and USA, specifically for the areas of product development, skill development and training, upgrading of information technology and professional consultancy (SBP, 2005). This intervention has not succeeded in its real purpose owing to cultural complexities of our society except by

improving competitive advantage in terms of cost, It is therefore proposed that the funds allocated for this intervention may be used through the proposed CTRI. Proposed areas for research include:

- Category – I: Ginning: behavioural dynamics in marketing; improvement in ginning technology; improvement in processes through BPR; enhancement of production efficiency through increased automation; and improvement in packing, handling, storing and transportation
- Category – II: Spinning: behavioural dynamics in marketing; improvement in spinning technology; improvement in processes though BPR; enhancement of production efficiency through increased; improvement in packing, handling, storing and transportation
- Category – III: Weaving: behavioural dynamics in marketing; improvement in weaving technology; improvement in processes like BPR; enhancement of production efficiency through increased; improvement in packing, handling, storing and transportation ;
- Category – IV: Processing: behavioural dynamics in marketing; improvement in textile processing technology; innovations in the use of chemicals / dyes etc.; improvement in processes like BPR; enhancement of production efficiency through increased; improvement in packing, handling, storing and transportation
- Category – V: Clothing – Garments, Knitwear, Hosiery, Apparel, Canvas etc.: behavioural dynamics in marketing; improvement in designing, cutting, stitching, and sewing technology; improvement in processes like BPR; enhancement of production efficiency through increased; improvement in packing, handling, storing and transportation.

Best Management Practices: Some companies like Masood Textile and Crescent Greenwood are very advanced stage on account of technology and management of people, while most of the organizations are lagging far behind. It is therefore, recommended that a comprehensive study may be launched to facilitate concerned trade bodies / associations in identification, documentation and dissemination of best practices. Every organization makes experiences – good or bad. There have been successes in both inter and intra-organizations. Tools of knowledge management (KM) can be used to establish KM systems in the companies to ensure continuous improvement in the organizations. It is expected that deployment of KM tools will also create angst for creativity and innovations.

Information Technology: Information Technology offers efficient solutions to various business related problems. Currently, there has been some success in the garment sector in Pakistan, for example, automation of processes in the textile mills like Masood Textile. Such experiences need to be replicated in other factories. This move does not only have the potential of reductions in waste and losses of resources but also help in triggering continuous improvement.

Joint Ventures and Transfer of Technology: There is substantial potential for FDI in the garments sector, however, the pace is very slow. It is recommended that CCIs and the concerned TAs should themselves evolve a strategy for arranging such ventures and should fix yearly targets. If they succeed in attracting US$ 5 billion every year in the garments sector, it will transform the technological landscape of the garments sector within few years.

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