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Skills development and competitiveness - the role of HRD

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**SKILLS DEVELOPMENT AND COMPETITIVENESS
- THE ROLE OF HRD**

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April, 1999

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CHAPTER 1

THE TECHNICAL EDUCATION AND VOCATIONAL TRAINING SYSTEM

Introduction

This study reflects an attempt to document the existing state of affairs in the fields of Technical Education and Vocational Training (TEVT) in Pakistan. Relationships between competitiveness and labour market performance, the level of skills and pattern of industrialisation are examined. Future challenges under globalisation and their likely impact on employment generation and skill needs is also dealt at length.

The first chapter of the study sketches out the existing system of TEVT, in terms of institutions, output and various trades which are being focussed upon by the system. Administrative set-up and the coordination mechanism is also briefly touched upon. Employability of the output produced by these institutions is discussed too.

Using the Household Income and Expenditure Survey (HIES) of 1993/94, the size of the trained labour force is estimated and its pattern of employment by rural/urban and informal/formal is provided in the second chapter. The information of the survey is also utilised to assess the impact of training on the earnings of the individuals. In addition the influence of training on employability of trainee is examined.

The third chapter contains discussion on recent initiatives of the government to enlist the participation of private sector in the TEVT System. The Skill Development Councils and their role is described. In addition the Government of Punjab's effort to expand technical and vocational education are discussed.

The fourth chapter comprises of few case studies of the existing training institutions. Their influence on different aspects of industrial development of the area as well as meeting the skills need is described. These case studies pertain to Institute of Leather Technology Gujranwala, Pak-German Wood Working Centre Peshawar, and Metal Industrial Development Centre Sialkot.

Competitiveness, Human Resource Development (HRD) and Future Challenges for Pakistan's economy are dealt in the fifth chapter. A brief discussion on the specificity of the type of technology used in the productive process of the economy and the effective use of HRD is made. The Total Factor Productivity (TFP) growth of Pakistan's economy during the past fifty years is presented. Information on the unit labour cost is provided and compared with South and East Asian Countries. The changes in unit labour cost during 1970-92 are examined and factors underlying this change are identified. Revealed Comparative Advantage (RCA) analysis is presented to frame

an idea about the products where Pakistan enjoys comparative advantage. Estimates pertaining to the possible effects of globalisation under WTO and post MFA scenario on employment generation are also presented.

Final chapter while summarizing the study attempts to identify the major challenges facing the Pakistan's economy. The needed HRD efforts to address some of the issues are outlined. Questions regarding the design of the training policy, the existing institutional weaknesses are addressed too.

THE TECHNICAL EDUCATION AND VOCATIONAL TRAINING SYSTEM

The existing TEVT System juxtaposed with the General Education System is provided in the chart. Broadly the TEVT System can be classified into (a) Formal or Institutional and (b) Informal depicted in the chart as OJT (on the job training) at the bottom under TEVT. It may be noted that this segment of TEVT appears to be the major source of skill training as described in the sections to follow.

The chart indicates the years of schooling for different levels of education, for primary it is 5 years and so on. Broadly, primary, middle, secondary, intermediate, degree, post graduates (such as M.Sc.) and in some fields the Doctorate (Ph.D) constitute different levels of general education in Pakistan. The allocation of students to science and arts subjects in colleges is generally made after matriculation (10 years of schooling). Entry into professional education is based on the student's performance at intermediate level. However for vocational education and training mostly the entry level qualification is matric or middle, with the exception of diploma in computer or some other specified courses where intermediate level qualification is required for entry.

Certain broad features of TEVT System and its inter-linkages with general education are worth mentioning.

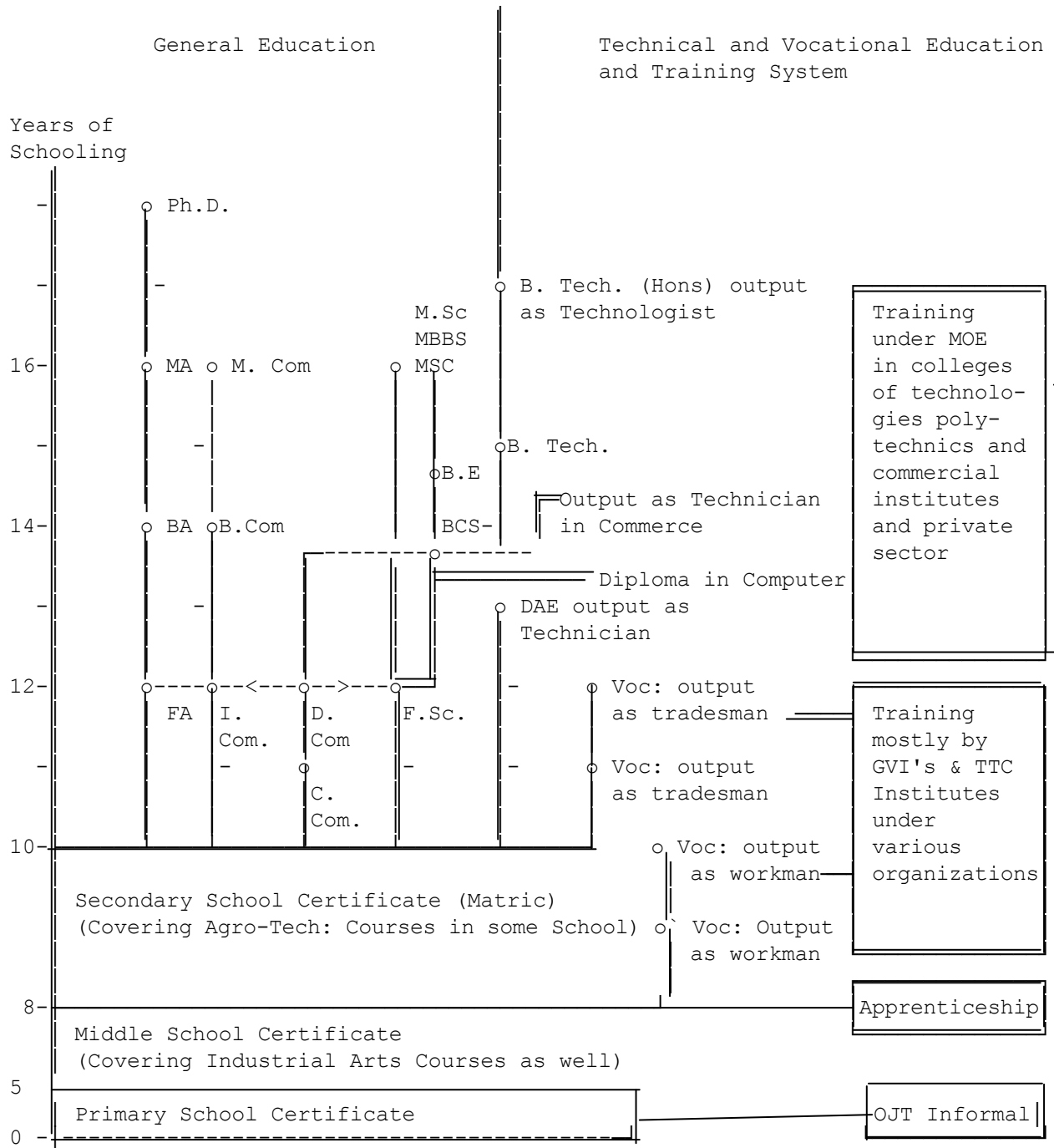
1. In contradistinction to general education which permits rise up the education ladder (from F.Sc to M.Sc, Ph.D and professional degrees) most of the certificate level and diploma courses offered in TEVT System are terminal. Hence for the latter (the blue collar) it offers a carrier path permitting little upward mobility as well as denying the system achieve vertical depth in skilling.
2. The entire TEVT System almost exhausts its requirement from general educational structure upto the intermediate level. Thus any improvement in quality of the tertiary education will not get automatically reflected in the quality of TEVT product.
3. Unlike the general education which administratively is under a unified and centralised management of Ministry of Education the TEVT system is fragmented and uncoordinated in the administrative set up.

The administrative set up with a distinction between Ministry of Education exclusively concerned with Technical Education, and some of the vocational training programmes and the remaining Ministries/Departments is discussed below. In addition effort is made to discuss technical education separately from vocational.

(A) Technical Education

The technician level training as a distinct stream was initiated in 1950's with the establishment of two polytechnics. The present estimates put the number of mono/polytechnics institutions to be 84 with 42 thousand capacity enrollment. (See Appendix Table 1). Polytechnics offer a three year post matric courses leading to Diploma of Associate Engineers (DAE) in 35 technologies. The curricula is prescribed by the Ministry of Education. In order to provide avenues of further enhancement DAE's can enroll in Colleges of Technology courses of two years duration to earn a B. Tech or B. Tech (Hons.). These colleges are affiliated with various engineering universities, however the Pakistan Engineering Council so far has resisted to register the graduates as professional engineer/technologists.

FLOW CHART OF GENERAL EDUCATION AND TEVT SYSTEM



The products of the polytechnics in principal should be equipped with (i) skill in industrial processes (ii) an understanding of the principals underlying these processes and (iii) experience in handling the industrial worker. It is because of these important attributes of this type of training that the National Education Policy (NEP in 1992) suggested expansion in polytechnics from 45 in 1990-91 to 95 in year 2002 and colleges of technology from 11 to 22 during the same period. The draft report on Education submitted by working group for Ninth Five Year Plan (1998-2003) recommended establishment of new institutions to meet the increasing demands of the technical education. Also it was suggested in the said report that courses in modern technologies such as (i) automation (ii) computer hardware and software (iii) electronic publication (iv) environmental control and (v) textile dyeing and finishing be offered.

Lack of qualified teachers, outdated curricula, and little interaction with industry and world of work are allegedly some of the weaknesses of technical education. Furthermore the overall resource crunch faced by economy during 1990's has severely constrained the non-salary component of the recurrent expenditure thereby negatively influencing the quality of training being imparted.

Employability and productivity enhancing effects of Technical Education provided in polytechnics has not been assessed during the past decade or so. Khawaja et.al (13) examined the employment status of polytechnic graduates of 1985/87 through a survey of 545 graduates, 14 principals and 25 employers. It was found that 50% of the graduates of 1985/87 were unemployed as on May, 1988 (the time of survey). The employment of polytechnic graduate was relatively higher in the government services than in the private sector. The institutions were found suffering from inadequate library and laboratory facilities. Employers according to the study regarded the curricula to be inadequate for jobs.

(B) Vocational Training Programmes

Various ministries and departments in addition to private initiatives are engaged in the provision of vocational training. The number of institutions and the capacity of output attributable to different agencies is provided in Table 1 for the year 1992. As revealed by the table major actors in the field of vocational training are:

- (1) The provincial education departments which administer the Government Vocational Institutes (GVI).
- (2) The Directorates of Manpower and Training (DMT) of Ministry of Labour and Manpower, at the provincial level administer Technical Training Centres (TTCs) Vocational Training Centres (VTCs) GVIs and Apprenticeship Training Centres (ATCs). In addition in-plant training programmes under Apprenticeship

Training Ordinance of 1962 also fall under the administration of provincial departments of manpower and training. Apprenticeship training is provided at the establishments employing 50 or more workers.

- (3) Training programmes undertaken by other organisations such as Social Welfare Departments, Small Industries Corporations, Agency for Barani Area Development, Overseas Pakistanis Foundation (OPF) etc.

As reflected by the table more than half of the output capacity in 1992 was with the Social Welfare Departments. While 20% of the total fell under the administrative jurisdiction of Ministry of Education and Labour. One of the major drawback of such a fragmented set up being the immense difficulty to keep track of the actual output by different trades produced by various organisations. For instance a recent publication of Ministry of Labour puts the training capacity of 103 thousand including 9400 trained under apprenticeship ordinance. This estimate is much less than the one reported in the table which does not incorporate Apprenticeship training. The establishment of National Training Board (NTB) discussed below is envisaged to achieve some level of coordination in the TEVT System.

Table 1
TEVT, Institutions and Capacity: Type and Output Capacity - 1992

	Certification	Duration	1991-92	
			No. of Insti- tutes	Output
ORGANISATION				
(a) Directorate of Technical Education				
1. Polytechnic and Colleges of Technology	D.A.E and B. Tech.	3 Years	62 (9)	35700
2. Commercial Training Institutes	I.Com. D. Com.	1 Year 2 Years	189	28500
3. Govt. Vocational Institutes	Certificate		185 (165)	13000 (9000)
(b) Directorate of Manpower and Training (Labour)				
1. T.T.C. and G.V.IS			73	11600
(c) Dte. of Social Welfare			2467 (415)	68200 (6200)
(d) Small Industries Corporation			306	9500
(e) Agriculture ABAD etc.			54	3170
(f) Industries			5	240
(g) ILO/UNHCR			12	640
(h) OPF			6	400
(i) Staff Welfare Organisation			14	1260
(j) Staff Railway, WAPDA, T&T etc.			43	11350
(k) Paramedical Staff Training			7	160
Total Institutions			<u>3172</u>	<u>119520</u>
Informal (guesstimated)				120000

Source: Ministry of Education, GOP and Asian Development Bank, Manila (1992)
"Technical Education and Vocational Training in Pakistan.
() report the female share.

National Training Board (NTB)

The NTB is a statutory body, constituted under the National Training Ordinance 1980 to regulate and promote training activities in the country. The responsibilities of NTB include, assessment of existing and future needs of skills, systematisation of training programmes, developing curricula, setting skill standards, and evaluation of training methodologies. The NTB comprises of membership belonging to Government, employers and employees and is supported by Provincial Training Boards. The secretariat for the NTB is provided by the National Training Bureau headed by a Director General of the Ministry of Labour.

Very little is documented about the actual performance of NTB in relation to mandated functions. Also the required technical competence of the members of NTB as well as its secretariat to undertake evaluation or regulation of training system in the country is not explicitly laid down. The policy focus of NTB has been the government vocational and technical training programmes which itself has hardly undergone any substantial change since the inception of NTB. More recently however, efforts have been to enlist the participation of private sector and to expand training activities to informal sector enterprises.

Currently National Training Bureau administers around 40 training courses. Majority of these courses specify entry qualification as matric with 12 to 24 months duration. The details are provided in Appendix Table 2. The numbers of the institutions directly operating under National Training Bureau and provincial manpower and training departments is depicted below in the Table 2.

Table 2
Institutions and Training Capacity Under National Training Bureau

Province	Institutions	Capacity
Federal: Islamabad	1	376
Punjab	31	9406
Sindh	24	5052
NWFP	19	2734
Baluchistan	9	1123
Total	84	17691

Source: A Handbook on Manpower and Employment in Pakistan, 1998.

It may be noted that training capacity does not automatically get converted into enrollments. Very little is known about capacity utilisation of these institutions. A study for instance estimated that enrollment was 64% of the capacity in early 1990s. (Semeiotics consultants 1991, 1992).

Employability

Not much is known about the employability of the vocationally trained people. Hardly any tracer study has been undertaken during 1990's. Studies conducted during the late 1980's produced mostly uncomfortable findings. For instance the study conducted by Labour Department of NWFP "Monitoring Technical Training Centres" in 1984 reported employment of the graduates to be 53%. Manpower directorate of the Punjab reported unemployment level of 53% among the GVI graduates of 1987. Another study conducted by EMMAY Associates for ILO ARTEP found a massive unemployment level ranging between 42% of the trainees belonging to 1986 and 61% relating to the graduates of 1989 (the year of the survey). This study covered passouts from TTCs, TVEs and ATCs functioning under the Departments of Manpower and Training.

These studies may have suffered from various procedural flaws but the overriding impression regarding the employability was hardly appealing. What happened during 1990's when overall unemployment level worsened remains a matter of speculation because hardly any tracer study has been conducted. Evidence based on HIES 1993/94 data is however provided in Chapter 2.

Apprenticeship Scheme

Currently the Apprenticeship Ordinance is applicable to the establishments employing 50 or more workers. In 1998 this training was being provided in 525 establishments with capacity to train 9400 persons, while actual enrollment remains unknown. At present 105 apprenticeable trades are notified by NTB. In addition some training also takes place outside the purview of the Apprenticeship Ordinance.

The provincial Labour Departments generally undertake the tracer studies to assess the employability of the output of Apprenticeship Scheme. Studies conducted by DMT Punjab for 1992, for instance yielded that 65% of the passouts were employed either by same employer (47%) or by other employers (17%). Six percent of the passouts got themselves self employed and 9% were jobless or unemployed. Around one fifth (20%) of apprentice, could not be traced.

Vocational Training for Women

According to Economic survey of 1997-98 almost one half of secondary vocational institutions, with two fifths of the enrollment, serve the females. Vocational training facilities for women in trades such as tailoring/dress making, embroidery, secretarial trades, computer operator and food processing are available in 2800 institutions with estimated 76000 enrollment capacity. The institutions/embroidery centres established by NGOs, industrial homes of Social Welfare Departments are one of the major contributors in female training. Other institution such as DMT of Labour, Education, Small Industries Development Corporation, and ABAD are also engaged. The province-wise breakdown of institutions and capacity is the following:

Table 3
Institution and Enrollments of Female

Province	No. of Institutions	Capacity
Punjab	1913	43200
Sindh	219	8517
NWFP	667	19028

Baluchistan	84	4865
Federal	<u>11</u>	<u>730</u>
Total	2894	76340

Evaluative research to assess the impact of this institutional training on employment or income generating capacity of the beneficiary is almost non-existing. Major findings of a study conducted during early 1990's by Raheela at IDS Peshawar are reproduced below.

The field survey covered, randomly selected 8 out of 100 vocational centres for women in the rural areas of three Tehsils of Peshawar District. It may be noted that these centres were established with an objective to improve the living conditions of the poverty stricken females through provision of training which was expected to fetch them a job or better earning opportunities. The study entitled "Vocational Education for Women in Rural Areas of Peshawar District" focussed on (a) to ascertain the contribution of these training programmes to the economic conditions of the trainees (b) identification of factors impeding female participation and (c) to recommend the needed measures for improvement. Major findings of this study are summarized below.

1. Generally the skills imparted by these vocational training centres were hand/machine embroidery, tailoring and knitting. However the vocational centres did not sponsor courses in specific crafts for fixed duration.
2. Most of the centres were suffering from inadequate accommodation, often located in one room given by local village chairman or other influential person. Not only was there inadequate access to drinking water and other facilities but the space was also insufficient. Similarly poor conditions of machines, non-availability of funds for repair of machines and lack of furniture were found to be the major problem faced by these training centres.
3. Nearly two fifths of the teachers were having education level upto Middle, while 25% were intermediate and the remaining being matriculate. Most of the teachers had benefited from a pre-service training courses of very short duration (10-15 days). Interestingly the study did try to suggest an inverse association between the level of education and performance as a teacher. Most of the teachers were paid a very small amount as a salary ranging from Rs. 450 to 1000 per month at the time of survey.
4. Enrollment in the centres were found to be substantially less than what was in the beginning of the centres. With the exception of one vocational centre (Papran) where enrollment was higher at the time of survey than that at the time of establishment of the centre the remaining 7 centres experienced a decline in the enrollment ranging from 35% to 60% in this comparative picture. Non availability of proper accommodation, lack of incentives and family restrictions were cited as major limiting factors in this context.

5. The teachers viewed that the trainees did not get jobs after acquiring the training. Very small proportion of the trained may get job in other training centres. A large number of trainees got engaged in contract work from local people but with very meagre wages/earnings. On the average around Rs. 50 per month were estimated to be the income. In other words this training had limited impact on the economic conditions of the trainees. However with the improvement in the marketing facilities this income can be increased.

6. Overall the administrative structure was fragmented wherein Local Government, APWA and Social Welfare Department were engaged in the administration of these institutes.

Informal Training (Ustad/Shagird)¹

Informal training under traditional ustad/shagird system accounts for majority of the trained work force in the country. However not much is known about this dominant system of training. Limited information available is based on surveys conducted to understand the workings of SSEs in general with focus on training aspect. Chaudhary (4) for instance examined skill generation and entrepreneurship development. The study was based on a survey of cities of Rawalpindi, Gujranwala, Sialkot, Daska, Mian Channu, Lahore and Karachi. Around, 2000 ustads and shagirds of equal proportion belonging to 24 trades were covered in the study. Major findings relating to skill generation are described below.

Most of the ustads/shagirds were moderately educated and had little, if any, formal training. Around 82% of ustads were self employed. The ustads generally acquired skills by working 2 to 4 years as shagird. An abundant supply of shagirds is generally available to ustads. Shagirds acquire skill in 3 to 5 years by working directly with ustads for 8 to 9 hours per day. The author regarded the training period to be unduly extended. The period of unpaid apprenticeship was reported to be around 2 years.

On the average there were 3 shagirds engaged per enterprise covered in the survey, however, the intake of young unskilled shagirds varied by the output and capacity utilisation of the enterprise. While shagirds joined the enterprise for learning the skills, ustads may have had different motives such as getting assistance in minor works, looking after the business in addition to transfer of skills. Given the fact that informal sector is a major source of employment, skill generation and entrepreneurship development, more information regarding different aspects is essential. The authors viewed that while new rules and regulations may turn out to be counterproductive because informal sector is a market driven phenomenon, however implementation of existing rules

¹Ustad is mastercraftsman or trainer while shagird is trainee.

regarding health standards, payment practices may reduce some of the violations.

The foregoing brief discussion of TEVT system hardly facilitates an understanding of the size and structure of TEVT products, the pattern of use and employability. Similarly the influence of training on productivity and earnings of individuals could not be documented. The data included in HIES 1993/94 are utilised to discuss some of these aspects in the next chapter.

CHAPTER 2

AVAILABILITY AND USE OF SKILLS - EVIDENCE BASED ON HOUSEHOLD SURVEY

The Supply of skills/Training

Hardly has there been any research effort to quantify the stock or temporal flow of the supply of technical and vocational training in Pakistan. Such an important exercise has been simply precluded by lack of adequate data. The household surveys and 10 per cent count of population census record general educational levels of the population covered, with no distinction for technical and vocational education or training. Innovations introduced in Household Income and Expenditure Surveys (HIES) and Labour Force Surveys (LFS) during the 1990's do facilitate crude estimates of trained persons. The HIES having a larger sample size than LFS and also yielding a distinction between on the job training and institutional training is preferred over LFS for an attempt to estimate the proportion of trained persons in the population and in particular the labour force for the year 1993/94. Information in HIES on training is gathered separately on formal training with duration of training and a question related to on the job training. Unfortunately HIES data do not provide information pertaining to outcome of training in terms of certificate/diplomas. These have to be inferred from the general education level of the respondents.

The responses to these questions yield three categories (a) the respondent who reported only on the job training (b) those who reported OJT as well as duration of training (c) the ones who did not report on the job training but reported the duration of training. All those who reported on the job training but not duration presumably have been provided OJT by Informal Sector i.e. Ustad/Shagird System and the other two categories lumped together can be regarded as the product of institutional training. It is likely that training under apprenticeship being of fixed duration has been reported in this second category.

The skill base of the country as yielded by the HIES 1993/94 using this procedure is incredibly low. Only 5.1% of the population aged 10 years and above can be associated with technical and vocational training. The breakdown by sex and type of training is summarized below in Table 4.

Table 4
Percentage Distribution of Population by Type of Training
(Age 10 Years and Over)

	Both Sexes	Male	Female
1. Population Trained	5.1	6.6	3.4
(a) OJT (informal)	3.2	4.1	2.4

(b) ¹ Formal(OJT+INST)	1.9	2.5	1.0
2. Population with no Training	94.9	93.4	96.6

Note: The table is based on raw data (unweighted) HIES 1993/94.

¹47% of this category has acquired both OJT as well as classroom training while 53% did not avail any OJT opportunity.

Associated with this very low proportion of population (10 years and over) trained, another disturbing feature of the above table being the predominance (63%) of pure on the job training which with same stretch of imagination can be regarded as product of Ustad/Shagird informal training system. The educational composition of the trained by mode of training is produced below in Table 5.

Table 5
Educational Composition of Trained by Sex

Educational Level	Male		Female		Both Sexes	
	INST	OJT	INST	OJT	INST	OJT
1. Illiterate and LT Primary	21.0	44.0	40.4	66.5	26.8	52.0
2. Primary	15.0	19.0	13.0	10.4	14.3	15.8
3. Middle	9.6	12.0	7.2	8.1	8.9	10.7
4. Matric	22.0	15.0	15.4	11.0	20.2	14.0
5. Intermediate	14.4	5.0	13.5	3.0	14.2	4.3
6. Degree and above	18.0	5.0	10.5	1.0	15.6	3.2
Total 100.0	100.0	100.0	100.0	100.0	100.0	100.0

Note: The table is based on raw data (unweighted) HIES 1993/94.

A cross tabulation of education level and mode of training depicted in the above table confirmed the conjecture that most of OJT in fact captured Ustad/Shagird system. Thus over half of the OJT was accounted by illiterates. This fraction was higher in case of females (67%) than male (44%). At the other end of the educational hierarchy (Matric plus) around half of the institutional training was accounted by this group, again this proportion in case of female being lower (40% than that of the male (54%). There appears to be a unique association between mode of training and level of education wherein the matriculation level served as inflection point. Those with lower than the matric disproportionately joined pure OJT while the same holds in case of institutional training for higher level of education. For instance out of those who participated in training 77% of illiterates and 67% below matric joined OJT while 73% of matric and higher level of education participated in institutional training. In other words the institutional training system has yet to modify its design to

embrace the illiterates and those with less than secondary school certificate, which according to 1996-97 LFS accounted for 85% of the population aged 10 and over.

Duration of Training

The type of information contained in HIES does not facilitate identification of the trades of training. However duration of training has been reported which can be used to understand its nature and depth. These data indicated (see table 6) that out of those who had training in institutions, only 33% had a training of over one year duration, while 30% had three months or less duration of training. There are stark differentials in terms of participation by sex. Around one-fourths of male had a training duration of 3 months or less, roughly half of the females (46%) fall in this category. On the other hand 40% of male benefited from training with duration of over one year, only 15% of female have had a similar opportunities. An estimated average duration of training courses worked out to 10.4 months for male and 6.2% for female.

Table 6
Distribution of Trained by Duration of Training (Age 10+)

Category	Less than 3 Months	4-6 Months	7-12 Months	Over One Year	Estimated Average Duration of Training (Months)
Both	30.2	12.8	23.7	33.2	9.2
Male	24.0	11.0	24.4	40.6	10.4
Female	45.9	17.2	22.0	14.8	6.2

Labour Force Participation

Activity rates exhibited by the (10 years and over) population reflected substantial differentials by those having a vocational training and those without. For instance 70% of those with training belonging to working age population, 10 years and over, were reported to be in labour force in contrast to 38.8% for the ones without any training. This edge of trained over untrained in labour force participation is shared both by males as well as females and increases the share of trained in the labour force to around 9%. (see table 7). Activity rates by type of training display an interesting pattern. While the male, who benefitted from OJT only, registered 94% activity rate in comparison to 86% for those who reported the duration of training. Female registered an opposite trend wherein the activity rates of the former (OJT) lag behind the latter. However it may be noted that the labour market participation is a product of diverse factors hence a careful interpretation of the above mentioned data is counselled.

Table 7
Activity Rate by Type of Training and Sex (Aged 10 Year & Over)

	Population All 10+	No Training	Institutional and OJT	OJT (only)	Total Trained
Male	64.6	62.8	85.8	93.5	90.1
Female	12.0	11.5	34.4	20.0	24.5
Both	39.3	37.7	71.0	67.4	70.6

Since most of the technical and vocational training being terminal partly explains higher activity level because a sizeable fraction of the untrained could still be in educational system. It is important to control for education level in making a valid comparison between trained and untrained as well as between OJT and institutionally trained. The comparison presented below reflects an attempt to adjust for this schooling effect on labour force participation.

In general one finds a lower level of inactivity among those who benefited from training than without it. However, the differentials are relatively wider for males and graduate females than the illiterate females.

Table 8
Inactivity Rates by Type of Training

Educational Levels	Male			Female		
	No Training	INST	OJT	No Training	INST	OJT
1. Illiterates	30.5	16.2	8.5	87.4	72.0	81.0
2. Degree	23.7	13.4	13.5	82.0	46.0	33.0

Source: Tabulations based on HIES 1993/94.

Employment Structure

The data are suggestive of a preponderance of the trained, institutional or informal, in the urban segment of the economy. For instance while 34% of the untrained employed were reported to be engaged in urban areas, the corresponding percentages for the institutionally trained and OJT were 64.5% and 53% respectively. Table below details the employment status of the trained and compares with those without training.

Table 9
Employment Status by Training (Rural/Urban)

Employment Status	Rural			Urban		
	No Training	INST	OJT	No Training	INST	OJT
1. Employer	0.7	-	-	1.9	1.8	1.9
2. Self Employed	32.9	27.1	26.6	21.8	13.5	18.0
3. Wage Employees	36.4	61.0	58.2	66.3	80.7	71.0
4. Unpaid Family Helper	30.0	11.4	15.2	10.0	4.0	9.1
Total	100.0	100.0	100.0	100.0	100.0	100.0

A cross tabulation of employment status with mode of training indicates relative concentration of the trained as wage employee in comparison to untrained particularly in rural areas. The association gets reversed in case of self employment particularly in urban areas. Similarly a lower fraction of trained opts as unpaid family helper than the untrained. Focussing upon the two modes of training one finds that fraction of those who work as unpaid family helper is higher for pure OJT than their counterparts.

Employment composition of trained versus those without any training indicates that intake of public sector is higher in case of those who reported duration of training than the pure OJT. Reverse is the case of informal employment defined as establishments/enterprises having less than 10 workers. The formal private sector exhibited lower level of participation of trained than the public sector employment. Table 10 provides the details.

Table 10
Percent of Employment by Training By Sector

Sector	Untrained		INST		OJT	
	1	2	1	2	1	2
Farm	98.5	98.2	0.6	0.7	0.9	1.1
Informal	86.7	86.6	3.7	3.7	9.6	9.7
Private Formal	86.6	86.4	5.6	5.7	7.8	7.9
Government	84.3	84.2	9.6	9.7	6.1	6.1
Total	91.0	87.4	3.3	5.0	5.7	7.7

Source: HIES 1993/94.

Note: Column 1 refers to total employment and column 2 to wage employment only.

while the above table is indicative of overall low intake of technical or vocationally trained person a disturbing result being that private formal sector fails to reflect edge over informal sector. In fact it is the public sector employment where fraction of trained is higher than the rest of the economy. This clearly fits in the characterisation of the economy by world Employment Report (7) "trapped in the low skill". Even if one looks upon the percentage distribution column No. 2 in the table above relating to wage employment the distribution hardly undergoes any perceptible change. The rural/urban dichotomy however does matter where the share of trained (INST and OJT) rises upto 15% in the wage employment of non-farm segments of urban economy.

Training and the Earnings

The impact of training on individual earnings is assessed by Nasir (23) using a multivariate regression framework for 1993/94 HIES data. It may be noted that the sub-set of wage employees in urban areas were covered in the analysis which also distinguishes between formal and informal sectors. The results are reproduced in the table 11 below.

Table 11
Coefficients of Ordinary Least Squared Estimates for
Different Sectors
(Dependent Variable = Log Monthly Earnings)

variables	Public	Private	Informal
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Constant	6.6370*** (64.42)	6.5650*** (38.31)	5.4960*** (75.11)
AGE	0.0357*** (6.33)	0.0371*** (4.73)	0.0837*** (20.91)
AGESQ	-0.00032*** (-4.54)	-0.00036*** (-3.95)	-0.00096*** (-19.69)
PRIMARY	0.000099 (0.003)	0.1190** (2.18)	0.1350*** (5.91)
MIDDLE	0.0962** (2.53)	0.2380*** (4.05)	0.2060*** (6.93)
MATRIC	0.2450*** (8.57)	0.3340*** (7.09)	0.3210*** (12.40)
DEGREE	0.4870*** (14.25)	0.6780*** (11.27)	0.6770*** (11.62)
PDEG	0.6470*** (15.78)	0.8210*** (11.21)	0.7410*** (8.16)
TRAINING	0.0426* (1.80)	0.0182 (0.39)	0.0534** (2.21)
PROFESSIONAL	0.3150*** (7.28)	0.3570*** (2.81)	0.4240*** (4.11)
MANAGER	0.4470*** (10.98)	0.5800*** (5.25)	0.9680*** (11.48)
CLERK	0.0883*** (3.17)	0.0967 (0.91)	0.0967* (1.74)
SERVICES	0.0056 (0.18)	-0.1020 (-0.96)	0.0846** (2.04)
LABOUR	0.0976*** (3.16)	-0.0410 (-0.40)	0.1020*** (2.64)
MS	0.0387 (1.51)	0.1710*** (3.41)	0.2080*** (7.81)
F-statistics	129.93	87.66	176.25
R ⁻²	0.5340	0.5930	0.4550
N	1576	833	2942

Source: Earning Differentials Between Public and Private Sectors in Pakistan by Zafar Mueen Nasir, PIDE (Mimeo), 1999.

***significant at 1 percent level
 **significant at 5 percent level
 *significant at 10 percent level

The coefficient of training (INST and OJT) emerges significant in case of Public Sector and Informal Sector wage employees. The simple interpretation of the regression results being that controlling for characteristics of individuals such as age, education and occupations training acquired by a person leads to 5% higher level of wages in informal sector and 4.2% in the government employment. The coefficient of training failed to acquire significance in case of private formal sector employment.

Sarghana (29) on the basis of a small sample of Rawalpindi city tried to assess the impact of on the job training on the earnings of individuals. His results too suggest the varying relationship between training and wages across different sectors of employment within the informal sector. The coefficient of on the job training was significant only in case of petty trading. In case of other sectors - transport, repair and maintenance and domestic services effect of OJT on wages was found to be insignificant.

Unemployment and Skill Training

Unemployment levels yielded by HIES data by mode of training and sex are provided in the Table 12.

Table 12
Unemployment Rates by Sex/Training: 1993/94

Sex	All	No Training	Training	
			INST	OJT
Male	2.5	2.6	2.2	1.3
Female	15.9	16.3	12.4	10.1
Both	4.4	4.6	3.7	2.2

Source: HIES, 1993/94.

As reflected by the table the product of Ustad/Shagird system (the pure OJT) displays the lowest level of unemployment. However, in general the unemployment among females is much higher than male. Still the acquisition of skill training has a positive impact on employability of females too.

CHAPTER 3

INVOLVING PRIVATE SECTOR - SOME INITIATIVES

Pakistan is ill equipped in comparison to other developing countries in terms of facilities and performance in the field of technical and vocational education. According to Human Development in South Asia 1998, enrollment in secondary technical education is 1.6% of the total secondary enrollment. An estimate based on HIES 1993/94 reveals that only 5% of the population aged 10 and over had any technical and vocational training of any sort, institutional and on the job. In the context of resource crunch during 1990s the vocational training programme failed to achieve the targets envisaged by Eighth five Year Plan (1992/93 - 1997/98) (See Table 13). The resource crunch has also adversely affected the functioning of institutions and quality of training.

Table 13
VTIs: 8th Plan Targets and Achievements

Province	Before 8th Plan (June 1993)*		8th Plan Target		8th Plan Achievement		Present Position	
	No. of Inst.	Capacity	No. of Inst.	Capacity	No. of Inst.	Capacity	No. of Inst.	Capacity
Punjab	136	17238	23	5211	16	3179	152	20417
Sindh	68	6020	19	2460	16	2110	84	8130
NWFP	77	4308	20	887	17	807	94	5115
Balochistan	37	1830	38	1458	24	983	61	2903
Federal	02	405	-	-	-	-	02	405
Total	320	29801	100	10016	73	7079	393	36970

Source: Report of Committee on Manpower and Employment for Preparation of Ninth Five Year Plan. Planning Commission, Government of Pakistan. Islamabad. 1997.

Notwithstanding the fact that the existing technical and vocational training output in the system is a miniscule, the relevance of the system for the labour market has been questionable. However efforts have been to enlist the participation and collaboration of the private sector for enhancing the relevance of the vocational training system. The Central Management Committees headed by representatives of private sector employers under National Vocational Training Project were established. Similarly Skill Development Councils have been set up in Punjab and Sindh Provinces to integrate the skill training with market needs. These are discussed below.

1. Skill Development Council

Establishment of Skill Development Council (SDC) represents initiatives towards participation of private sector in the field of

technical and vocational training. Currently three SDCs, Karachi, Lahore and Islamabad are established, as a joint project of Government, World Bank, ILO and Employer's Federation, under the restructured National Vocational Training Project Phase II. Major functions of these councils are to (i) provide a link between employers and training institutions (ii) identification of training needs of the geographical area (iii) analysis and prioritization of training needs and meeting these needs through contracted arrangements with training institutions and establishments for in-plant training (iv) determination and updating of training standard, and (v) promotion of in-plant and other training for benefit of industry.

SDC in Karachi has just completed its third year. Major activities undertaken constitute the completion of training needs survey, preparation of the directory of training institutes and constitution of Trade Technical Committees to develop a need based course outline for the trades of (i) Computer Studies (ii) Industrial Electronics (iii) Textile Technology (iv) Mechanical Maintenance (v) Sales and Marketing and (vi) Secretarial Services. In addition the programmes under Prime Minister's Training Programme (Karachi Package) and Youth Training programme (Full Cost Recovery Basis) have been undertaken. The training was imparted to 611 persons under P.M. Training Programme funded by Federal Government. The details of the programme by trades is reproduced below in Table 14.

Table 14
 Trainees Trained Under Prime Minister's Training Programme:
 Skill Development Council Karachi

Name of the Course	Duration	Trainees Trained
1. Industrial Electronics	09 Months	79
2. Industrial Instrument mechanics	09 Months	25
3. Biomedical Mechanic	09 Months	24
4. Computer Maintenance	09 Months	49
5. Auto Mechanic (Diesel)	06 Months	42
6. Auto Mechanic (Patrol)	06 Months	17
7. Refrigeration & Air-condition Mechanic	06 Months	42
8. Radio and Television Mechanic	06 Months	10
9. Computer Operator	06 Months	263
10. AutoCad	02 Months	18
11. Secretarial Sciences	08 Months	42
Total	611	

Source: 3 Years of Skill Development Council, Developing Human Capital. SDC, Karachi.

Under the Youth Training Programme 601 persons have been trained while 825 are currently under training. Since these courses are being designed on full cost recovery basis, there is also a provision of financial assistance in terms of repayable loans to students which will be repaid after the trainee gets employment. Uptill now rupees one million has been paid to 160 students as financial assistance. The Appendix Tables No. 3 and 4 provide details of the trades in which training is imparted.

The SDC, Lahore appears to be engaged in the organisation of various skill upgrading programmes in collaboration with different training providers. In addition training programmes for first line supervisors are being arranged. Also it runs programmes in collaboration with British Education and Training System and during the year 1998/99 nearly 500 participants would get Management and Information Technology Training.

PUNJAB VOCATIONAL TRAINING COUNCIL (PVTC)

Punjab Vocational Training Council (PVTC) was incorporated through passing "Punjab Vocational Training Council Act, 1998" on Ist October, 1998 by the Provincial Assembly of the Punjab. The act assigns PVTC the charter to set-up, regulate and manage the Vocational Training Institutes (VTIs) in Punjab. The Council is headed by Mr. Sikandar M. Khan, Special Assistant to Chief Minister. The members of the Council include the Chairman Task Force on Agriculture and Price Control, Chairman Punjab Privatisation Board, and prominent businessmen. Provincial Secretaries of the departments of Finance, Zakat and Ushr, and Higher Education serve as ex-officio members. The Secretary, Labour

and Manpower is the co-opted Member of the Council. The council is assisted by staff and professionals headed by General Manager. The Punjab Government has granted Rs. 100 million for setting up the council.

Through the establishment of PVTC Zakat funds are to be used to impart demand driven skill training to the deserving persons (mustahqeen) at VTIs. Hence poverty alleviation is sought through skill provision. The VTIs are to be managed by the local business community, the potential employers, with full functional and financial autonomy. In the first phase, at least one VTI will be established in each district to serve as a focal point for assessing core training needs and guide for further establishment of the VTIs in the district.

The PVTC has so far established two VTIs with an enrollment of around 200 which are being imparted skills in PC's electrician, turner, machinists etc. The class room training will be combined with on the job training in local factory to be arranged by VTI. It is claimed that VTI's are demand driven and provision of training is based on needs assessment but the procedures underlying needs assessment merit further scrutiny.

It is imperative to assess and evaluate the precise contribution of private sector involvement in TEVT System of the country. The Centre Management Committees (CMCs) with an objective to manage and guide the T.T.C's at local level apparently met with little success. Either the employer could not squeeze the time to attend a meeting in some cases and/or the principal of TTC failed to do the homework for fruitful collaboration. Besides the T.T.C's at local level lack requisite autonomy to introduce a change in the curricula, or duration, and entry qualification etc. for a course, hence a private/public collaboration at the level of training centres under the existing centralised dispensation is mostly of academic interest excepting the case when on the job training facilities may be offered by the local employers. Evidence on such an achievement made by any T.T. Centres is not readily available.

The SDC's and recently constituted Punjab's PVTC need to be carefully examined and evaluated in the light of the objectives of the private/public collaboration. While SDC's are essentially implementation of a donor financed project, the Punjab's initiative was due to one time grant and depends upon availability of Zakat fund. Sustainability of these ventures has to be seriously assessed.

The procedure used by SDC to identify training needs be examined. The brochures published by SDC Karachi for Diploma in Textile Weaving under Employment Opportunities for instance reads "The placement cell of SDC and Pakistan Silk and Rayon Mills

Association will also provide assistance to trainees in getting employment". Another pamphlet describing computer courses indicates that trainees can get employment in the fields of banking, management, sales and marketing and so on.

The composition of the output of SDC Karachi is dominated by computer related training. Almost 70% of the trainees benefitted in this trade. Given the mushroom growth of the computer training centres in private sector in the major urban centres of Pakistan and the widely held perception that a computer literate can get a job, the exact contribution of SDC has to be identified. Similarly PVTC appears to be a quantum intervention in TEVT. It is advisable to examine the possibilities of improving existing network rather than creating new ones with unproductive duplication.

CHAPTER 4

CASE STUDIES

In this chapter three case studies of training centres are presented which belong to the existing TEVT System. These are often regarded to be successful with positive impact on the development of local industry and meeting their skill needs. In addition these also represent the cost-effective approaches to skill development and technological upgradation.

INSTITUTE OF LEATHER TECHNOLOGY, GUJRANWALA

This institute administered by Small Industries Corporation of Punjab, was established in 1947 to provide training, technical advice, physical and chemical testing facilities and research for leather goods industry. The relevance, availability and use of the services of I.L.T. was assessed by Punjab Eco-Research Institute through a survey conducted in early 1990's. In this evaluative exercise the effect of training of I.L.T. were examined alongwith other technical and consultancy services rendered by ILT. This can serve as a case study wherein skill training is integrated with other services for meeting the requirements of an industry. Major findings related to training on the basis of responses from 47 leather goods producers are provided below.

1. Only six percent of the responding firms got their workers equipped with the skills at the training centre while the remaining provided either on the job training (77%) or through in-house training courses (17%).
2. The managers/owners who benefitted from training centre accounted for nearly 30% of the firms. In case of large firms which export almost 80% of their produce, 50% of the managers/owners were trained by I.L.T.
3. Nearly 70% of the firms which employed I.L.T. trainees were satisfied with their performance.
4. Around half of the employers regarded syllabus to include irrelevant subjects while one-fourth viewed that some relevant subjects were missing.
5. Majority of employers regarded the duration of diploma course (3 years) to be adequate with F.Sc. as entry level qualification.
6. Appointment of qualified staff, provision of material for practical and introduction of short courses were some of the recommendations offered by employers to improve the training services of I.L.T.

7. A sizeable fraction of the respondents reportedly encountered difficulties in getting skilled labour while on the other hand few firms participated in I.L.T. training. The researchers of the study speculated that firm's ability to finance the training could be one of the reason, hence there was a need for institutional support from the government to expand the production of skilled workers. In other words investment in training could be sub-optimal if left entirely to private initiatives.

PAK-GERMAN WOOD WORKING CENTRE, PESHAWAR

Introduction

The Pak-German Wood Working Centre was established with the co-operation of the Government of the Islamic Republic of Pakistan and the Government of the Federal Republic of Germany at a total cost of Rs. 2.6 million in 1972. The Centre is under the direct control of NWFP Small Industries Development Board which is an autonomous body. The objectives of the Centre are to meet the technical manpower requirements of the country by training skilled workmen for industry and trade in the art of cabinet making. The intensive course of the Centre prepares the trainees for employment by providing them with high levels and standards of skills as necessary for direct utilisation by the employers.

Training

The Pak-German Wood Working Centre has designed its courses to the requirements of modern and progressive techniques and imparts training under realistic conditions. The Training Centre trains apprentices who are matriculate for two years to get a certificate. From these trainees suitable persons are chosen to be trained to the level of Wood Technologist and Foreman. This requires another one and half year training. Only those persons are selected for Diploma Course who have high first class marks in 2 years basic course. The training is absolutely free. Books, stationery and working uniform is provided free of cost and the trainees are paid stipends which range from Rs. 125 per month during first year to Rs. 250 per month during the third year. In addition free hostel accommodation for 15 trainees residing outside Peshawar can be provided.

Training Scheme:

The training period is divided into two parts:

1. Basic Training.
2. Specialised Training.

During Basic Training the trainee is familiarised with the general practical skill and theoretical knowledge of his trade. During the specialised training he is trained in furniture making by using working drawings made by himself. The trainee also learns the general practical skill of operating machines alongwith the theoretical knowledge for repair, maintenance and machine tool sharpening. Priority is given to the practical part of the training. The ratio between practical and theory is 60:40.

Employability

After the successful completion of courses of two years and three and half years certificate and diploma respectively are awarded which are recognised by the Government of NWFP, Labour and Welfare Department. Over the years this training centre has trained around 350 persons. Most of these trainees were employed soon after they finished their training. The certificate holders get BPS-11 in the government and Rs. 3 to 4 thousand if employed by private sector. The diploma holders in the government service generally are hired in the scale of BPS-14 and fetch over Rs. 5000/- per month in the private sector.

The centre is running on the self finance basis since last 10 years essentially through the production of saleable furniture and other material. Six other centres located at different locations of NWFP (Karak, Mansehra, Timargarh, Chitral, and Jareed) have also been established to provide training in cabinet making and other related skills. At present over 70 trainees are benefitting from these centres which are also functioning on self finance basis.

METAL INDUSTRIES DEVELOPMENT CENTRE (MIDC), SIALKOT

MIDC was established in 1943, and has been an important source of technology and skills diffusion as well as promoter of entrepreneurship in Sialkot's metal industry. The major functions of the centre are:

(a) To serve as an advisory and extension services centre in the field of production techniques, modernisation, quality control, material testing, etc. relating to surgical instruments, tools and other light engineering products;

(b) To provide training facilities in the field of Mechanical Technology, including its theory and practice.

The Centre has five important sections which support local industry in different ways viz., (1) machine shop; (2) heat treatment shop; (3) forging shop; (4) quality control shop and (5) credit facility section which offers Rs. 48000/- per unit for purchase of domestic machinery at concessional rate of 4% below I.D.B.P. rate. At present, it has Rs. 10 million revolving fund for this purpose. This oldest public sector technical support centre for the small metal working firms is widely used by all enterprises for heat treatment and other specialist services like metal testing. It is also an important source of new technologies and, thus, a growth facilitating agent of the industry. Over the years, this centre has introduced use of many new process like vacuum heat treatment for metal hardening which ensures better product quality. Thus the Centre has served as an important source of technology and skills diffusion in addition to doing other important jobs.

CHAPTER 5

COMPETITIVENESS HRD, AND FUTURE CHALLENGES

This chapter attempts at ascertaining the association between competitiveness and HRD wherein the relevance of the productive structure for utilisation of HRD is discussed. The technological levels obtained in Pakistan and experience of productivity growth during the past is briefly described. Changes in unit labour cost since 1970 have been worked out to identify the determinants of these changes. Existing comparative advantage in terms of RCA analysis has been presented. Finally the section ends with some speculations about the future challenges and opportunities entailed by the trade liberalisation under WTO.

Admittedly the need to improve the economic position of a country as well as living standards of its population on a sustainable basis can hardly be emphasized. This in turn calls for due cognizance of the emerging global opportunities and challenges with a view to increase national competitiveness for increasing the participation in global trade and investment opportunities. The national competitiveness has been defined variously as "ability to produce goods and services that meet the test of international markets" (Laura Tyson) and "ability to generate, while being and remaining exposed to international competition, relatively high factor incomes and factor employment levels on a sustainable basis" (OECD).

Michael Porter's conceptualisation classifies the countries into distinct stages in this context. In the first, Factor Driven Stage "virtually all internationally successful industries in the nation draw their advantage almost solely from basic factors of production". This is presumably the well celebrated phase of labour intensive export promotion co-existing with surplus labour condition. The second or Investment Driven Stage is defined as "national competitiveness is based on the ability and willingness of the firms to invest aggressively" while the Innovation Driven Stage is the one where firms not only improve borrowed technology but also create. Firms compete in differentiated segments on the basis of productivity due to use of high levels of skills and technology. This stage contrasts sharply with the Factor Driven Stage in the type and level of skills used, wherein firms compete on the basis of price in industries requiring little product and process technology and utilise semi-skilled labour. According to this analysis the level and depth of skilling is therefore an interactive outcome of various factors such as technology, industrial mix, HRD and commercial policies in addition to factor endowments of the country.

The link between the stage of development of a country and productive utilization of education/skills is also identified by some researchers. Analysis of the growth process by Pritchett (26) reckoning with human capital accumulation casts doubts on whether the pay off to education has been near to what is generally claimed through rate of return estimation. Mingat & Tan (18) further extended this line of enquiry using data on 113 countries for 1960-85 period and demonstrated the association between level of development of a country and the returns from different levels of education. The Table 15 reproduced below suggested that Full Social Rate of Returns from higher level of education were zero, low and middle income countries, while the same were 20% for high income countries. Studies like this tend to suggest that it would be unwise to expect automatic results from any and all sorts of investments in human capital. Clearly some other conditions such as level of technology, industrial mix, and appropriate macro and micro policies must exist to reap the benefit from investment in education and training.

Table 15
Estimated Full Rates of Return by Level of
Education and Country Group

Level of Education	Low-income Group (74 Countries)	Middle-income Group (19 Countries)	High-income Group (20 Countries)
Primary	47	39	-
Secondary	8	52	<0
Higher Education	<0	<0	20

Source: Alain Mingat and Jee-Peng Tan (1996). The Full Social Returns to Education: Estimates Based on Countries' Economic Growth Performance. Human Capital Development working Papers, world Bank.

Technological Capacity

The examination and assessment of technological capacity of Pakistan lies beyond the scope of this paper. However it may be mentioned that Ghulam Kibria (14) on the basis of the reports of Pakistan Tariff Commission during the fifties found that Pakistan's important industries at the time of independence in 1947 were manufacturing of diesel engines, machine tools, cinema projectors, electric fans, and manufacturing of certain plants. All these were located around Mughalpura workshop in Lahore. According to Kibria the policy makers since independence rather than focussing upon these industries opted for import of technologies particularly

under import substitution strategy. Irrespective of the factors responsible, the existing technological capacity is low. Pakistan's position in terms of hardware and software of technology in a comparative framework is hardly enviable. Below a table reproduces some evidence.

Table 16
Communications, Information and Science and Technology

Economy	Per 1,000 People		Internet Hosts per 10,000 People	Scientist & Engineers in R&D per Million People	High Technology Exports % of Mfa. Exports	No. of Patent Applications Filed 1996	
	Telephone Main Lines 1996	Personal Computers				Residents	Non-residents
Bangladesh	3	..	0.00	..	..	70	156
India	15	1.5	0.05	151	10	1,545	5,021
Nepal	5	..	0.07	22	0	3	5
Pakistan	18	1.2	0.07	54	3	21	678
Sri Lanka	14	3.3	0.33	175	3	76	15,944
Indonesia	21	4.8	0.54	181	18	..	..
Korea Rep	430	131.7	28.77	2,636	39	59,249	37,308
Malaysia	183	42.8	19.30	87	67	141	3,911
Philippines	25	9.3	0.59	87	62	..	..
Singapore	513	216.8	196.30	2,512	71	10	11,871
Thailand	70	16.7	2.11	173	36	..	..
China	45	3.0	0.21	537	21	10.066	31.707
Japan	489	128.0	75.80	5.677	39	335.061	53.896

Source: Naseem, S.M. (1999). Globalization, Technology and Asian Economic Growth. Paper presented in the 14th Annual General Meeting and Conference of the PSDE (28-31, January, 1999), Islamabad. Pakistan.

Productivity Trends

Competitiveness and productivity of the economy is expected to rise with technological improvements and innovations. Given the low technological base and domination of assembly over manufacturing, one can hardly expect substantial Total Factor Productivity (TFP) growth. Kemal (10) made an effort to understand the sources of growth for 1947-91 period. Gains in TFP were ascertained using growth of value added and growth of inputs. As reproduced below in the table, the major finding being a decline at a rate of 0.56 in TFP during 1947-91. However the same exercise did suggest a modest rise during 1978-91.

Table 17
Growth of Output and Productivity

Plan/Period	Growth Rate of	Relative Contribution of
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		Value Added	Aggregated Inputs	Total Factor Productivity	Aggregated Inputs	Productivity Gains
Pre-Plan	1950-55	3.14	6.27	-3.09	199	-99
First Plan	1955-60	3.32	5.18	-1.76	156	-56
Second Plan	1960-65	6.46	8.49	-1.87	131	-31
Third Plan	1965-70	6.10	5.96	+0.13	97	3
(Non-Plan)	1970-78	4.96	5.03	-0.07	101	-1
Fifth Plan	1978-83	6.54	5.58	0.91	85	15
Sixth Plan	1983-88	6.54	5.44	0.74	87	13
Seventh Plan	1988-91	5.48	4.57	0.88	83	17
(First three years)						
Overall	1950-91	5.24	5.83	-0.56	111	-11

Source: A. R. Kemal. (1992). Report of the Sub-Committee on Sources of Growth in Pakistan. Committee on Economic and Social Well-being for the Eighth Five Year Plan. Pakistan Institute of Development Economics, Islamabad.

In terms of major sectoral break down, with the development of hybrid seeds during the sixties and Nayab variety of cotton during 1988-91 the agriculture experienced a growth in TFP. In case of manufacturing sector productivity growth was experienced during the 1960's which Kemal attributed to exposure to foreign competition, deregulation of the economy, liberal import policy leading to higher capacity utilisation and learning by doing. Kemal in his study outlined the reasons for low TFP growth since independence. The poor performance of Pakistan in this context has been ascribed to "lack of technological development and lack of human resource development". In addition the author criticized the indigenisation policy because of its bias in favour of assembly rather than manufacturing of components

Studies conducted in the context of Pakistan 2010 for instance similarly yielded that T.F.P. index for the economy as a whole has declined from 100 in 1980-81 to 97 in 1996-97. At the disaggregated level of sectors large scale manufacturing exhibited a marginal rise from 100 to 102 while agriculture experienced a decline from 100 to 99 during the same period. The detailed picture of large scale manufacturing revealed a mixed performance by different industrial categories for the nine year period of 1981-90. In case of textiles and industrial chemicals TFP improved while it worsened in the remaining categories.

In a recent exercise Mahmood & Siddiqui (16) analysed the TFP growth in large scale manufacturing using a multivariate regression framework. Owing to paucity of the data, some assumptions were resorted too, while the analysis was confined to sub-period of 1980/91. Results reported in Table 18 identify the role of R&D and openness in enhancing the TFP. However there is a need to have a

disaggregated analysis².

Unit Labour Cost

Analysing the competitiveness is a complex task. The changes in productivity, innovation and quality are important long term determinants of competitiveness, which in turn are influenced by incentive regime, and regulatory structures bearing upon transaction costs. However analysts also simplify the procedure and focus on macro variables such as exchange rate, relative movements in prices and wage rates. Below a brief discussion on worker compensation in comparative framework and determinants of changes in unit labour cost is made.

Table 18
Determinants of Total Factor Productivity Growth (O.L.S. Regression)

Explanatory Variables	Equation-1	Equation-2	Equation-3	Equation-4	Equation-5	Equation-6
Constant	-21.808 (0.83)	-20.346 (0.774)	-7.067 (1.207)	15.224 (2.736)	-11.874 (2.304)	-1.707 (0.109)
G ₁₁	0.152 (4.087)	0.155 (4.157)	0.145 (4.673)	0.111 (2.789)	0.100 (2.526)	0.135 (4.121)
G ₁₂	-	0.115 (1.004)	0.120 (1.085)	0.127 (0.865)	-	-
G ₂	0.773 (2.525)	0.650 (1.976)	0.596 (1.977)	1.050 (2.703)	0.724 (2.191)	0.683 (2.332)
O ₁	0.174 (0.600)	0.151 (0.519)	-	-	-	-
O ₂	-	-	-	0.944 (2.277)	0.706 (1.961)	0.557 (2.691)
G ₃₁	0.029 (2.264)	0.033 (2.466)	0.031 (2.519)	-	-	0.031 (2.257)
G ₃₂	0.323 (2.125)	0.280 (1.768)	0.244 (1.772)	0.521 (2.425)	0.393 (1.989)	0.153 (0.654)
D	-8.191 (3.199)	-8.796 (3.345)	-8.490 (3.428)	-2.912 (1.228)	-	-7.310 (2.845)
Adj. R-squ.	0.561	0.561	0.591	0.273	0.259	0.570
F	4.621	4.108	5.086	2.628	3.269	4.689
N	18	18	18	27	27	18

Note: t-values are reported in parenthesis.

G₁₁ and G₁₂ are growth rate of expenditure on R & D and growth rate in scientific and technical manpower, respectively; G₂ is growth in human capital; G₃₁ is growth rate foreign patent registered; G₃₂ is growth rate

²Needless to emphasise that the approach to measure TFP depends critically on the assumption of cost minimisation, competitive factor markets and constant returns to scales. Furthermore, it is also sensitive to the definition and measurement of input, level of disaggregation in input measurement, the factors netted out and on the assumptions regarding the shares of primary factors of production. In empirical literature, alternative methods are used to estimate TFP. However, these methods rest on the assumption that equilibrium conditions hold for every data point and ignore the dynamic issues, lagged adjustment process of inputs and the role of price expectations. Hence there is a need to have a careful interpretation of the forementioned studies on TFP growth.

of national expenditure on R & D. O1 and O2 are openness measures; and D is dummy variable for political stability.

Source: Mahmood, Z. and Siddiqui, R. "State of Technology and Productivity in Pakistan's Manufacturing Industries: Some Strategic Directions to Build Technological Competence", (forthcoming).

Table 19 in Panel A compares hourly compensation costs of production workers in large scale manufacturing of Pakistan for 1986-92 with India, Sri Lanka, Indonesia and Korea. Hourly wage costs in Pakistan estimated by dividing the annual employment cost per production worker reported in Census with 2496 (hours/year), in US\$ are second only to Korea. It may be noted that these costs in case of exports industries of Pakistan (textiles, apparel and leather) are only slightly higher than that of India or Sri Lanka. In Panel B the movement of Real Unit cost of labour is depicted wherein one finds that in case of Pakistan the decline in this indicator closely follows that of Indonesia and differs with Korea and Sri Lanka where this index has risen. The index for exports industries in Pakistan has registered larger decline than that of Indonesia, however cross-country comparisons are risky besides the deflator (Real Exchange Rate) used in case of Pakistan is slightly at variance with the one used by Godfrey for other countries.

Table 19 Hourly Compensation costs for Production Worker in Manufacturing - Selected Countries (US Dollar)

Panel-A							
Country	1986	1987	1988	1989	1990	1991	1992
Indonesia	0.40	0.34	0.34	0.39	0.41	0.47	0.59
India	0.39	0.38	0.37	-	-	-	-
Sri Lanka	0.29	0.30	0.31	0.31	0.35	0.40	0.40
Korea	1.31	1.59	2.20	3.17	3.71	4.46	4.93
Pakistan							
(a) All Manufacturing	0.51	0.56	0.57	N.A.	0.61	N.A.	N.A.
(b) Textile, Apparel and Leather	0.37	0.40	0.43	N.A.	0.47	N.A.	N.A.
Panel B							
Real Unit Labour Cost (Index)							
Country	1986	1987	1988	1989	1990	1991	1992
Indonesia	100	73	74	67	65	72	72
India	100	80	66	NA	NA	NA	NA
Sri Lanka	100	96	77	53	114	131	128
Korea	100	99	130	185	208	222	236
Pakistan							
(a) All Manufacturing	100	94	86	NA	76	NA	NA
(b) Textile, Apparel and Leather	100	107	88	NA	62	NA	NA

Note: (1) Pakistan's data are based on Census of Manufacturing Industries which are provided for financial years. Thus under 1986, the CMI 1985-86 is used.
 (2) For other countries Martin Godfrey.

Following Mazumdar (17) three categories of factor which influence international competitiveness can be identified. Changes in wage productivity gap - the difference between the rate of change in real wages and that of physical productivity of labour. An increase in wage productivity gap decreases international competitiveness. Domestic real exchange rate (DRER), the difference between the price index of non-traded and traded goods. The former is often simulated by CPI while the latter by manufacturing producer's price index. If changes in CPI exceed those in the PPI then labour cost will increase. Thirdly nominal exchange rate devaluation reduces the cost of manufacturing labour in terms of foreign currency.

Table below provides annual changes in these three components for 1970-87 and 1987-91 sub periods.

Table 20

Changes in Unit Labour Cost (Growth Rate)

<u>Period</u>	<u>(W-V) + (Pc-Pp)</u>	<u>- e</u>	<u>ULC</u>
1970-87	-0.008 + 0.002	-0.078	= -0.084
1987-91	0.008 + -0.025	-0.09	= -0.107

The calculations reported in the above table yield that unit labour cost has declined at the growth rate of 8% during 1970-87 and 10.7% during 1987-91. Exchange rate depreciation mostly explains this decline. In the pre-SAP period (1970-87) the wage/productivity gap was slightly negative while the same being positive in post SAP (1987-91) period. This can be attributed to very low productivity growth during the later sub-period. The indicator of price-differentials denotes that during the latter sub-period rise in producer's prices surpassed that of the consumer prices.

Revealed Comparative Advantage (RCA)

RCA analysis provides a picture of comparative advantage based on existing trade patterns and export concentration. In so doing such an exercise facilitates understanding of potential opportunities for the country. RCA analysis was undertaken in the context of Pakistan 2010 project. The major findings of this study are discussed below.

Utilizing the information for 1990 and 1995 on Pakistan's major exports at four digit level classification the study classified the products not only on the basis of the most current RCA but also by relative changes over five year period. Competitive position of Pakistan's exports was indicated by four distinct group of products. In cases where RCA was greater than one and increasing the product group was identified as strongly positioned, but if RCA declined over 5 years it was identified as threatened product group. In case of products where RCA was less than one but increasing the product group was characterised as improving product group however if the RCA experienced a decline during the said period it was declared as weakly positioned product group (See RCA tables in the Appendix Table 5).

While highlighting the narrow export base with precarious dependence on cotton/textile sector the study did identify some non-textile products with strong potentials. Clearly however textile and apparel (the largest export group) is likely to continue as leading export industry. The study also suggested a focus on the food related categories to "make new inroads into global markets".

Trade Liberalisation

During the past decade or so there have been perceptible shifts in thinking on development resulting in greater role for private sector and also a shift in the degrees of freedom for the countries to participate in the world economy. The process of globalization entailed advances towards foreign trade and capital movement. A new world economic order governed by WTO will determine the governing methods, legislation and trade relationships. Thus while opportunities to benefit from export performance have expanded the policy instruments to undertake new economic activities and development of technological capabilities in the developing world have been blunted. This process of globalization appears to have been attended by major burst of technological changes, industrial restructuring and information revolution.

The likely influence of the trade liberalization on Pakistan is assessed by number of researchers. Ingco and Winters (8) for instance estimated that Pakistan's total merchandise exports to developed and developing countries will be subjected to a lower rate of tariff, a weighted average tariff reduction by the order of 2.4% and 6.9% respectively. Similarly Pakistan's major manufactured export commodity, textile and clothing, hitherto restricted by MFA will be positively influenced. The above cited study provided an estimated gains (in 1992 prices) ranging from US\$ 500 million to US\$ 1.3 billion from abolition of MFA expected to take place in 2004. In case of agricultural commodities the expected gains range from US\$ 27 to 43 million.

Efforts needed in terms of policy reforms, to remove distortions, quality improvement and other related matters are

currently being examined to effectualise the expected gains. In a recent study (Zafar 1999) for instance viewed that "Trade opportunities will only materialise if our exporters are able to effectively compete with their competitors". This study also alludes to the possibilities wherein Pakistan's access to scientific and technological knowledge gets restricted thereby adversely affecting the productivity growth in the country. The study while identifying promotion of indigenous technology as Pakistan's strategic challenge in the long run, recommends for preparation of a plan to restructure textile and clothing industry and Pakistan's innovation system, provision of efficient (soft and hard) infrastructure and development of skills.

Strength and weaknesses of textile industry in Pakistan with a view to assess its readiness to reap the benefits from removal of MFA is also the subject matter of the study by Zia (1999). The author viewed that the predominance of the spinning sector has adversely influenced in that the share of high value added exports in total has been much lower than the potential. The author while attributing this imbalance to disproportionate policy favours to spinners, viewed that "this sector still needs crutches to live on". The study further argued that textile producers neglected R&D, with little investment in quality and understanding consumer performances and viewed that the industry is "going to be a laggard in the world market after 2004 when new trading order begins". In this context the author also lamented over the absence of institutional network to promote managerial, technical and marketing skills.

Employment Implication of Trade Liberalisation

Notwithstanding the limitations of the analysis aimed at quantification of the impact of trade liberalization, Mahmood (15) tried to simulate the employment implication of low tariff regime in the manufacturing sector of Pakistan for the period 1992-2007. Estimates are based on the ERP and DRC's for the 1980/81 and 1990/91. In addition the assumed growth rates of value added in 9th five year plan and perspective plan were utilised. Also trade and industrial policies reflected by the above official approaches were incorporated for projection purpose. The projections provided two variants - optimistic and conservative - for three sub-period, immediate run, medium run and the long run. The employment projections for the large scale manufacturing sector are reproduced below in the table.

Table 21
Projected Employment in Large Scale Manufacturing (Growth Rates)

	Conservative Estimates	Optimistic Estimates
--	------------------------	----------------------

	Output	Employment	Output	Employment
Immediate Run 1991-93	4.3	-0.1	6.4	0.2
Medium Run 2002-2003	5.7	2.1	6.6	3.2
Long Run 2007-2008	7.4	4.3	9.2	6.0

Source: Trade liberalization and manufacturing Employment in Pakistan by Zafar Mahmood, PIDE, Mimeo, (1998).

In addition the study provides estimates on the indirect employment creation through growth in manufacturing output by using raw material to output ratio and then converting it into employment using output/labour ratio, given the information yielded by input/output tables that 40% of the raw materials used in manufacturing originates from non-manufacturing sector. Indirect employment estimates are higher than the direct.

Admittedly these projected employment generation in the wake of trade liberalization suffer from various limitations, such as lack of data, simplistic procedures and failure to reckon with the interactive outcome of fierce competition in the global market. These projections simply imply that adoption of a uniform tariff rate of 15% and achievement of the growth targets reflected by 9th plan and perspective plan, the resultant employment generation could be substantial in large scale manufacturing. However most of additional employment generation is likely to take place in the labour intensive products thereby having little productivity growth. This is evident from increasing size of elasticity coefficients of employment with respect to output. For instance it rises from 0.031 to 0.65 under optimistic scenario from immediate to the long run.

In addition to the crude methodology applied in the above projection, some pieces of evidence would counsel application of care in the interpretation too. In a recent study a negative association between exports and employment in large scale manufacturing under a variety of a common single equation function was found (31). In a breakdown by sub-periods, the said study reported that export elasticity of employment was small but positive for the 1971-87 period but for subsequent period 1988-90, the period which witnessed tariff reduction and liberalization, it turned negative. Similarly a decomposition analysis using Mazumdar's framework to discern the relative contribution of labour market and domestic inflation on real wages the 1969-87 period was compared with the 1988-95 period. Interestingly enough the employment effect was much lower in the second period. In essence the aggregative nature of all these studies impair the validity of their conclusion.

Given the avowed objective of Pakistan 2010 (Perspective Plan)

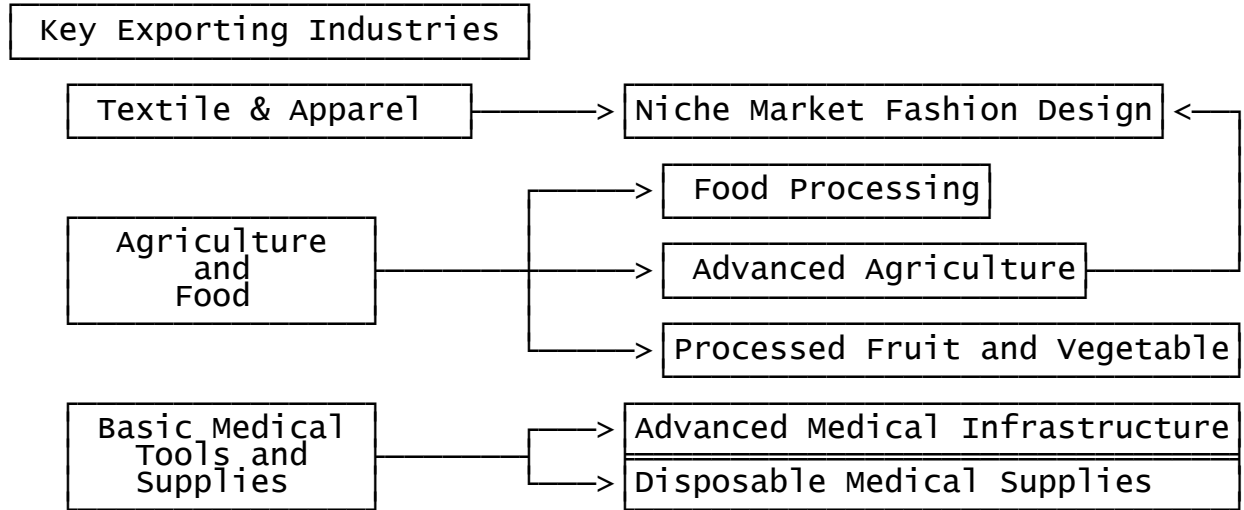
to shift the productive structure to knowledge based industries and in particular increase the share of high value added products in the commodity mix of exports the straight forward projection of the past into future will be problematic. The desired productive structure is depicted in the chart. Mechanics of shift from the existing structure of industries and products to the ones targeted has yet to be articulated by the planners and policy makers in terms of concrete policy measures and incentive structure. Still, Mahmood's above cited exercise furnishes a useful first run of projections which can be adjusted for desired shifts in terms of product, process and technology. Also there is a need to reckon with the response of the competitors. In addition the analysis based on RCA's needs to be continuously updated to facilitate understanding of the shift in comparative advantage and competitiveness of the country. Needless to emphasize that the HRD policies should be an interactive outcome of these considerations. The shift implicit in Pak 2010 may entail a different skill mix wherein substantial re-allocation of labour can hardly be ruled out. An example of the Italian garment industry provided in the box is instructive in this respect.

Figure

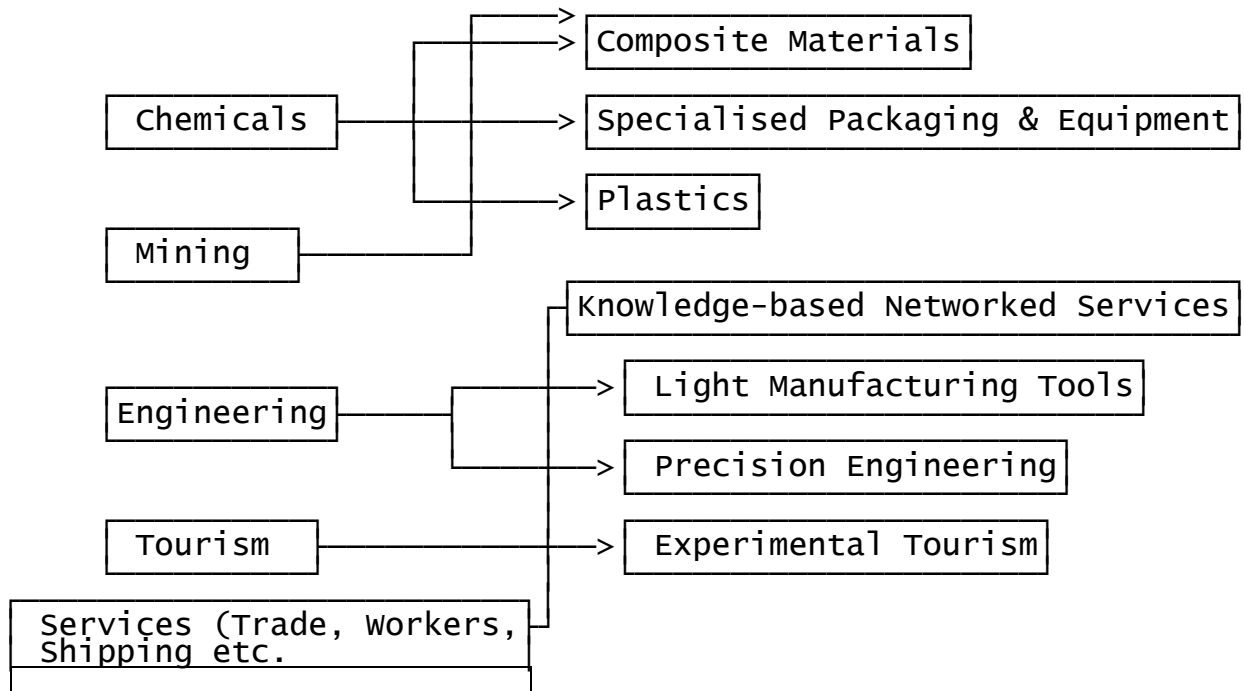
Transformation of Pakistan's Industrial Structure: A Scheme

Current Industries

Future Industries



Other Domestic Industries



ITALIAN CLOTHING INDUSTRY

The Italian clothing industry performed remarkably well in the 1980s considering the ever-increasing international competition and its rather high wage costs per worker. This success can be attributed to a number of factors. First, the industry specialised in the high and medium priced end of the market. Secondly, it increasingly relied on the efficient interdependent networks of small firms concentrated in industrial districts spread all over the country. Thirdly, the large firms adopted the best available technology and computerised management methods. They went through a process of de-verticalisation and now have a more flexible organisation allowing them to exploit more effectively the opportunities offered by the changing demand trends. Fourthly, labour costs were reduced as a result of the industry relocating within the country and by the growth of small firms. Finally, government labour subsidies helped in coping with redundancies.

Exports were the dynamic source of demand. Productivity increased (and employment declined) thanks to the introduction of new fixed capital stock and of process automation. The average size of companies was reduced as many large and medium-sized companies were closed. The introduction of new technologies proceeded in companies of all sizes. However, most jobs were lost in the large firms, where the effect of labour-saving new technologies was compounded by the process of relocating the more labour-intensive production phases elsewhere. In firms with more than 20 employees employment dropped from 169 to 155 thousand between 1980 and 1987. Value added per worker grew by around 3 per cent per year in real terms between 1980 and 1987.

Source: Pent, Graziella Fornengo (1992). "Product Differentiation and Process Innovation in the Italian Clothing Industry" in Industry on the Move, Causes and Consequences of International Relocation in the Manufacturing Industry Edited by Gijsbert Van Liemt, ILO, Geneva.

CHAPTER 6

SUMMARY AND RECOMMENDATIONS

SUMMARY

Pakistan is ill equipped in comparison to other developing countries in terms of facilities and performance in the field of technical and vocational education. According to Human Development in South Asia 1998, enrollment in secondary technical education is 1.6% of the total secondary enrollment. An estimate based on HIES 1993/94 reveals that only 5% of the population aged 10 and over had any technical and vocational training of any sort, institutional and on the job.

Technical education mostly carried out in Polytechnic is administered by the Directorate of Technical Education (MOE), while the vocational training falls under the jurisdiction of National Training Board. However there is multiplicity of organisations engaged in this field. In addition in-plant apprenticeship programme under the Apprenticeship Ordinance 1962 is carried out by different industries and administered by Provincial Directorates of Manpower and Training.

On the basis of HIES data one finds that in 1993/94 around 9% of the labour force did benefit from some sort of technical and vocational education/training. Informal sector ustad/shagird system falling outside the domain of public institutional network emerges to be the major contributor.

Employability and hence the relevance of the output of the training system was difficult to assess simply because of the lack of reliable data. During the 1990's hardly any tracer study was conducted to have some idea regarding the labour market performance of the graduates of TEVT system of the country. Studies pertaining to mid and late 1980's did suggest that absorption of the technically trained in the labour market confronted problems and resulted in substantial unemployment. The information yielded by the HIES data is indicative of an edge of trained labour force over their counterparts in getting employment, thereby yielding a lower level of unemployment among the former.

Skill use pattern revealed by HIES data highlights the low intake of formal private sector partly explaining the low demand for skills. The public sector outperforms in this comparison by registering higher level of relative intake of trained persons than both private formal and informal sector. Acquisition of training (institutional or informal) is associated with higher level of wages both in public sector and informal sector jobs, while private formal sector wage employment failed to register such an association.

The vocational Training System in Pakistan is administratively fragmented posing the problems of standardisation and

certification. Not only the curricula appear to be outmoded in contrast to emerging needs but inflexibility in the programmes in terms of duration, trades and overall delivery system also weakens the system. The resource crunch of 1990's has adversely affected the functioning of institutions and quality of training.

Efforts have been to enlist the participation and collaboration of the private sector for enhancing the relevance of the vocational training system. The Central Management Committees (CMS) headed by representatives of private sector employers under National Vocational Training Project were established for TTCs. Similarly Skill Development Councils have been set up in Punjab and Sindh Provinces to integrate the skill training with needs.

Notwithstanding the fact that the existing technical and vocational training output in the system is a miniscule, the relevance of the system for the market needs has been questionable. This frustrating dilemma has to be examined in the totality of the context. The simple lesson that a robust economy is a precondition for technical skills to thrive appeared to have been glossed over so far.

Technological capacity (both in terms of hardware & software) of Pakistan remains low in comparison to similarly placed other developing countries. A historical analysis of TFP growth offers a distressing account. With the exception of some impact of improved seeds in 1960's for wheat and in early 1980' in case of cotton the growth in agriculture has been mostly input based. In case of large scale manufacturing openness in the 1980 appeared to have some salutary effect. However the overall picture is hardly comforting, a decline at a rate of 0-56 during 1947-91 at the aggregate level of the economy.

In a comparative framework the labour cost, hourly compensation of production worker in large scale manufacturing, puts Pakistan ahead of neighbouring countries and Indonesia too. However if the comparison is restricted to export industries of Pakistan than the difference gets narrowed perceptibly for the period 1986-92. The real unit labour cost in Pakistan has declined, particularly in case of export industries where the magnitude of decline was more than that of Indonesia for the period under review. A decomposition analysis is suggestive that exchange rate depreciation played a major role in this context. In fact the low productivity growth during 1987-92 had a negative influence on the competitiveness of the country.

Macro Economic Context

The 1990's for Pakistan's economy can be characterised as the decade of stagnation. GDP growth during the first eight years of the decade appears to be averaging around 4.3% or so. With the possible exception of livestock sub-sector the remaining branches of the economy exhibited subdued performance. Manufacturing was worst performer in this comparison. Overall, however the sectoral

contribution remains unaltered with commodity producing sector accounting for half of the GDP. Various factors such as resource crunch, low level of investment, transition to low protection regime, and others such as law and order situation in Karachi are cited for this poor performance of the economy which in turn had a negative impact on labour market.

Employment and Unemployment

Stagnation in economic growth, freeze on government hiring, deflationary effect of budgetary measures under structural adjustment and shift in the governmental role wherein job escalation in public sector was no more feasible constitute some of the influencing factors for job creation. The conjunctive influence of these factors bearing upon the labour market produced employment growth less than that of growth in labour force during 1990s.

Open unemployment rate, admittedly not an adequate indicator in the developing world, is indicative of a worsening situation in the labour market (see Appendix Table 6). Unemployment rate yielded by 1996/97 Labour Force Survey (LFS) is almost twice that of 1986/87. It may be highlighted that open unemployment rate based on labour force survey is an imperfect proxy of labour utilisation. A closer scrutiny of the data contained in LFS reveals substantial non-participation in labour force for professionals and degree holders particularly in case of females which appears rather esoteric. For instance according to LFS 1994/95 71% of graduates and 50% of female medical doctors opted to be outside the labour force. In case of postgraduate females the percentage came to 56%. Given that tertiary level of education is highly subsidised such a level of inactivity raises serious equity and efficiency concerns. Thus low level of employment growth, increasing marginalisation and casualisation of labour, rising unemployment level and declining real wages constitute some of the disturbing features of 1990's. In addition given the demographic base of the country, extrapolation of the past labour absorptive experience is suggestive of a worsening situation in future too.

Some projection exercises are reflective of the imperviousness of the existing levels of unemployment even under the optimistic condition of 7% annual growth rate of GDP (see Appendix Table 7). An additional disturbing trend being a perceptible shift in the educational composition of the unemployed wherein not only the educated (matric and above) will suffer from higher rate of unemployment than at present but also experience a rise in their relative share of the unemployed. Given that substantial fraction of the educated used to be engaged in public sector services in the past which are currently undergoing the downsizing, the absorption of the educated in future is going to be difficult particularly if the commodity producing sectors and non-public services continue to remain absorbers only of unskilled and semi-skilled labour. Also whatever effective policy interventions were made in the past to improve the employment situation may not be feasible or relevant in the totality of policy environments of future.

The challenges to policy makers therefore are to reactivate the growth process to put the economy back on track. In the context of increased global competition, export promotion has to be accorded a top priority. In order to increase employment opportunities the focus has to be on low ICOR industries such as small scale with an emphasis on autonomous productivity growth through careful selection of process and products. The HRD policies including training have to be formulated keeping in view these considerations. Some areas of concern are discussed below:

RECOMMENDATIONS

1. Clarification and Prioritisation of Objectives of HRD

Given a high level of underutilisation of the educated (degree holders) with bleak prospects for future, there is a need to re-examine the policy thrust on tertiary education which happens to be highly subsidised. Equally important is to improve the quality of matriculates, and intermediate pass outs to be equipped with necessary training to meet the future challenges.

2. TEVT System

In addition to various limitations often attributed to TEVT system, a major change in the expectations of policy makers pertaining to the role of skill training is needed. Rather than regarding it as a vehicle to promote employment, its appropriate role should be to release the skill constraint in the strategic absorption or re-allocation of human resources in the economy. The TEVT system is regarded to be inadequate, irrelevant qualitatively poor and administratively fragmented. It is imperative to examine each of these weaknesses in the proper context in which the system is operative. Below a brief discussion is made starting with problems of coordination.

(a) Coordination and Flexibility

Proliferation of agencies, federal, provincial and others have been pointed out with very little coordinating mechanism. In the absence of inter-agency coordination the system generates varying levels of skills. It is also difficult to identify the exact role of different actors besides possible duplication. The plethora of institution engaged could be rooted in history but also reflects the very mode of overall dispensation in the country which is featured by promotion and protection of ministerial/departmental interests incidently to some extent consistent with donors' preference for wide visibility. There is a need to mount a comprehensive study to review and analyse the role of various agencies.

It should be kept in view that there could be genuine trade off between coordination leading to centralisation and the needed flexibility at local level. Particularly if the training programme

involves a localised and focussed approach such as for small scale and informal sectors the overriding concern with coordination has to be modified. However harmony between policies pertaining to education, science and technology, industrial and overall development and the programmes of TEVT system needs to be ensured. Can the existing structures like NTB with secretariat in one Directorate of Ministry of Labour deliver this? Should a core agency such as Planning Commission be assigned this task with or without getting NTB shifted to Planning Commission? Question like these merit consideration alongwith the review of organisational framework of TEVT.

(b) Enhancing the Relevance of TEVT

Two different types of proxies are often used to highlight the irrelevance of the system. First one pertains to supply side such as outmoded curricula, lack of practical experience low quality of instructional staff etc. The second refers to demand side often captured by unemployability coexisting with shortage of skills. However it should be remembered that mostly it is the response of employers in a survey which highlights these weaknesses. It is not clear that oft quoted shortage of skilled workers by employer refers to quantitative aspect or some attributes. Similarly it may be noted that employability of the TEVT product can not be immune to the overall demand conditions in the country. Admittedly the curricula in most of the public sector institutions is based on academic subjects not on the job analysis of cluster of occupations. Mechanism to undertake such an analysis and getting the curricula modified accordingly have to be examined and put in place.

(c) Skill Upgradation in Informal Sector and SSES

Currently informal sector under traditional ustad/shagird system is the major contributory to skill formation in the country. Not only is the quality of training substandard because of the obsolescence of knowledge of mastercraftsman (ustad) but training period also being unduly extended. Major factors responsible for holding back the technological upgradation in the informal sector are the restricted demand for products, lack of knowledge of varied international demand and its required standards, absence of R&D institutions for SSE and knowledge as well as availability of possible technologies.

The government beginning with the 8th Five Year Plan appeared to be cognizant of these problems of informal sector and SEEs. However the approaches to solve the problems have been procedure driven such as registration of SSE, Certification etc. Assistance provided through Mobile workshop needs evaluation. It is not clear how skill improvement can take place without an access to new technology and machine.

The existing approaches through NTB will have to be modified

to provide effective assistance to SSE. Needed is a set up with sufficient flexibility to perform inter-related functions at local areas. These functions may include training, product testing, improving the quality standards, technological innovations, and dissemination of information regarding import/export regulations, managerial, marketing and consumer preferences.

Recently constituted SMEDA has to examine carefully the needs for an integrated package entailing collaboration of many agencies besides the private sector. Examination of the possibilities of expanding the activities of some of existing centres (discussed in case studies) to deliver these function appears imperative. In this context it would be useful to assess the merits of "small firms industrial districts" approach proposed by Khalid Nadvi (21).

(d) Assessment of Skill Needs

Skill needs assessment is not a simple matter. But much more imaginative and complex is the anticipation of skill needs for future in the wake of globalisation and liberalisation. Even the best practice employers do not have an exact idea regarding the skill structure required for high value added textile exports. International organisations like ILO and UNIDO may be approached for guidance in this respects.

(e) Private Sector Involvement

In order to enhance the relevance of TEVT system for the market, efforts have been to enlist the private sector participation since the commencement of 8th Five Year Plan. Establishment of Centre Management Committees, Skill Development Councils and recently constituted Punjab's PVTC are some of the examples. There is a need to review the progress attained under these initiatives to establish the following: (a) how the skill needs were assessed (b) were there any modifications in the syllabus and curricula suggested by SDC and (c) what procedures were opted to introduce changes in the delivery system of TEVT. In fact an objective assessment of the private sector contribution is desperately needed to avoid slipping into duplication of functions.

(f) Improvement of Information Base

At present it is almost impossible to have the data on enrollment and pass outs from TEVT system for the country. In order to improve the functioning of the system monitoring and evaluation is absolutely essential. In this context Planning Commission should take the initiative to build a data base for all the public sector institutions. In order to cover the NGO's and informal sector, insertion of few questions in the LFS annually conducted by FBS will be quite helpful. In addition there is a need to get evaluative exercises periodically conducted by non-partisan academic/research institution to assess the delivery system, employability of output and employers views in this respect. An inventory of informal sector activities is needed to formulate

adequate training policy.

BIBLIOGRAPHY

1. Ashraf, Muhammad, Mahmood Ali Saleem and Muhammad Jameel Khan (1993). Socio Economic Study of Agricultural Machinery Production Units at Mian Channu (update of Baseline Survey) PERI, Lahore.
2. Begum, Raheela (1990). Vocational Education for Women in Rural Areas of Peshawar District. Publication No. 207, IDS, Peshawar.
3. Case Studies on Technical and Vocational Education in Asia and the PACIFIC. Asia-Pacific Centre of Educational Innovation for Development, UNESCO Principal Regional Office for Asia and the PACIFIC, Bangkok, 1996.
4. Chaudhary, M.A., Parvez Azim and Abid Aman Burki (1993). Skill Generation and Entrepreneurship Development Under "Ustad/Shagird" System in Pakistan. Islamabad, Study Conducted for the National Manpower Commission, Friedreich Ebert Stiftung.
5. Haq, Mazharul, Mohammad Sarwar and Muhammad Jameel Khan (1992). Monitoring of Institute of Leather Technology. Gujranwala Services: A Survey of Beneficiary Tanneries Punjab Economic Research Institute, Lahore.
6. Haq, Mahboobul and Khadija Haq (1998). "Human Development in South Asia 1998". Human Development Centre, Islamabad.
7. ILO. World Employment Report, 1998. ILO, Geneva.
8. Ingco, M. D. L.A. Winters (1995) "Pakistan and the Uruguay Round: Impact and Opportunities A Quantitative Assessment". A Background Paper for Pakistan 2010 Report. International Economic Department, Trade Division, Washington, D.C.: The World Bank.
9. Irfan, Mohammad (1998). "Employment Structure and Wages in Pakistan: Trends in 1990's". Mimeo. PIDE, Islamabad.
10. Kemal, A. R. (1992). Report of the Sub-Committee on Sources of Growth in Pakistan. Committee on Economic and Social Well-being for the Eighth Five Year Plan. Pakistan Institute of Development Economics, Islamabad.
11. Kemal, A. R. and Zafar Mahmood (1993). Labour Absorption in the Informal Sector and Economic Growth in Pakistan, Islamabad, Friedreich Ebert Stiftung.
12. Khan, Naheed Zia (1999). "Textile Sector of Pakistan: The Challenges Beyond 2004". Paper presented at 14th Annual General Meeting, PIDE, Islamabad.

13. Khawaja, Sarfraz, Munir Quaisarani and Aslam Bhatti. (1991). "Technical Education, Its Relevance to Job Market". Academy of Education Planning and Management Ministry of Education (Research Report Islamabad).
14. Kibria, Ghulam (1997). Pakistan Ki Moashi Taraqi Kaise Ho. Fiction House, Muzang Road, Lahore.
15. Mahmood, Zafar (1998). "Trade Liberalisation and Manufacturing Employment in Pakistan". New Delhi: SAAT/ILO.
16. Mahmood, Z. and Rehana Siddiqui (1999). "State of Technology and Productivity in Pakistan's Manufacturing Industries: Some Strategic Directions to Build Technological Competence", (forthcoming). Pakistan Institute of Development Economics, Islamabad.
17. Mazumdar, D. and P. Basu (1994). "Macroeconomic Policies, Growth and Employment: The East and South East Asian Experience". Paper prepared under the ILO/UNDP Project "Economic Policy and Employment" Paper No. 7, Geneva: International Labour Office.
18. Mingat, Alain and Jee-Peng Tan (1996). The Full Social Returns to Education: Estimates Based on Countries' Economic Growth Performance. Human Capital Development working Papers, world Bank.
19. Ministry of Education, GOP and Asian Development Bank (1992). Technical Education and Vocational Training in Pakistan. Manilla.
20. Moo Ki Bai and Woo Hyun Choo (1994). "Adjustment in Skill Training in Periods of Structural Adjustment and Economic Reforms in the Republic of Korea" in Social Dimensions of Economic Reforms in Asia Ed. Rizwanul Islam, SAAT. ILO, New Delhi.
21. Nadvi, K. (1994). "Small Firm Industrial districts: A New Institutional Framework for Policy and Research on Small Firms", Karachi, Proceedings of the workshop on Micro and Small Scale Enterprises' Development in Pakistan, National Development Research Centre.
22. Naseem, S.M. (1999). "Globalization, Technology and Asian Economic Growth". Paper presented in the 14th Annual General Meeting and Conference of the PSDE (28-31, January), Islamabad. Pakistan.

23. Nasir, Zafar Mueen (1999). "Earning Differentials Between Public and Private Sectors in Pakistan". Islamabad: PIDE (Mimeo).
24. Naqvi, S.N.H. and Zafar Mahmood (1996). "Globalisation, Liberalisation and Employment Strategies in Pakistan". The Indian Journal of Labour Economics.
25. Porter, Michael (1990). The Competitive Advantage of Nations. Free Press, New York.
26. Pritchett, Lant (1996). Where Has All the Education Gone: Policy Research Department. World Bank.
27. Report of Committee on Manpower and Employment for Preparation of Ninth Five Year Plan. Planning Commission, Government of Pakistan. Islamabad. 1997.
28. Report of the National Manpower Commission Government of Pakistan. Ministry of Labour, Manpower and Overseas Pakistanis, Islamabad, 1991.
29. Sarghana, Mohammad Arif (1999). "The Urban Informal Sector in an Adjusting Economy. The Case of Pakistan" paper presented at 14th Annual General Meeting of the PSDE, PIDE, Islamabad.
30. Semeiotics Consultants (1992). Study on Cost Recovery and Financing of Vocational Training, Islamabad, Submitted to National Training Board, Manpower Division, Government of Pakistan.
31. World Employment Report. 1998-99, ILO, Geneva.
32. Zaman, Arshad and Associates (1998). Adjustment Policies and Unemployment in Pakistan. Karachi.

Appendix Table 1

Number of Secondary Vocational Institutions by Type

Type of Institutions	1982-83	1986-87	1989-90	1992-93	1994-95	1996-97
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Commercial	62	116	156	143	144	145
Polytechnic/technical	23	35	48	55	52	53

Enrollment in Secondary Vocational Institutions by Type and Sex

Commercial

Total	14620	14032	18138	22715	25635	25820
Male	14398	14032	17988	22250	25068	25270
Female	222	-	150	465	567	550

Polytechnic/Technical

Total	14733	14132	23541	28215	27921	28485
Male	14482	12629	21860	26204	26110	26750
Female	251	1503	1681	2011	1811	1735

Source: 50 years of Pakistan in statistics.

Appendix Table 2
List of Technical Training Courses being Provided by NTB

Name of Trade	Duration of Course	Entry Qualification	Age
1. Armature Winder	12 months	Matric	16-20 years
2. Architectural Drafting	12 & 24 months	Matric	16-20 years
3. Auto Body Denter	12 months	Middle	16-20 years
4. Auto Electrician	12 months	Middle	16-20 years
5. Auto Body Spray Painter	12 months	Middle	16-20 years
6. Bench Fitter	12 & 24 months	Middle	16-20 years
7. Bricklayer/Mason	12 months	Middle	16-20 years
8. Building Painter	12 months	Middle	16-20 years
9. Carpenter	12 & 24 months	Middle	16-20 years
10. Carpenter Sports Goods	12 months	Middle	16-20 years
11. Construction Machinery Operator	12 months	Matric	16-20 years
12. Const. Machinery Mechanic (C)	12 months	Matric	16-20 years
13. Construction Machubert (En)	12 months	Matric	16-20 years
14. Computer System Operator	12 months	Matric	16-20 years
15. Draughtsman (Civil)	12 & 24 months	Matric	16-20 years
16. Draughtsman (Mechanical)	12 & 24 months	Matric	16-20 years
17. Dress Maker & Dress Designer	12 months	Matric	16-20 years
18. Electrical wireman/Electric	12 & 24 months	Matric	16-20 years
19. Hospital Technician	12 months	Matric	16-20 years
20. Household Appliance Rep.	12 months	Matric	16-20 years
21. Instrument Mechanic	12 & 24 months	Matric	16-20 years
22. Industrial Electrician	12 & 24 months	Matric	16-20 years
23. Leather Sports Goods	12 months	Matric	16-20 years
24. Machinist	12 & 24 months	Matric	16-20 years
25. Motor Vehicle Mechanic (L)	12 & 24 months	Middle	16-20 years
26. Motor Vehicle Mechanic (H)	12 & 24 months	Middle	16-20 years
27. Multi Skill Training	12 months	Matric	16-20 years
28. Multiwright Fitter	12 & 24 months	Matric	16-20 years
29. Plumbing/Sanitary Installer	12 & 24 months	Middle	16-20 years
30. Radio/T.V. Mechanic	12 & 24 months	Matric	16-20 years
31. RAC Mechanic	12 & 24 months	Matric	16-20 years
32. Sheet Metal Worker	12 months	Middle	16-20 years
33. Surgical Equipment Mechanic	12 months	Matric	16-20 years
34. Shuttering (Mono Level)	06 months	Middle	16-20 years
35. Steel Fixer	06 months	Middle	16-20 years
36. Tailoring	12 months	Middle	16-20 years
37. Textile Fitter Spinning	12 months	Matric	16-20 years
38. Turner	12 & 24 months	Middle	16-20 years
39. Tractor Mechanic	12 months	Middle	16-20 years
40. Welding (Acr & Gas)	12 & 18 months	Middle	16-20 years

Source: Technical Unit, M/O Labour, Manpower and Overseas Pakistanis, Government of Pakistan. A Handbook on Manpower and Employment in Pakistan, 1998.

Appendix Table 3

Course-wise Detail of Trainees Completed Training
(Youth Training Programme SDC Karachi)

Name of Course	Duration	Trainees Trained
1. Diploma in Textile Technology	12 Months	18
2. Specialized Diploma in Computer	06 Months	382
3. Diploma in Secretarial Sciences	12 Months	49
4. Certificate Course in Autocad	02 Months	20
5. Computer Programming	02 Months	16
6. Quality Control (Textile Weaving)	03 Months	06
7. Weaving Mechanic (Sulzer Machine)	03 Months	08
8. Staple Spinning	03 Months	20
9. Fibre Technology	03 Months	18
10. Microsoft Certified Professional Training Programme	02 Months	34
11. Diploma in Cosmetology	12 Months	10
12. Fashion Designing	03 weeks	20
Total		601

Source: 3 Years of skill Development Council, Developing Human Capital. SDC, Karachi.

Appendix Table 4

Course-wise Detail of Trainees Undergoing Training
(Youth Training Programme SDC Karachi)

Name of Course	Duration	No. of Trainees
1. Diploma in Colour Chemistry	12 Months	43
2. Diploma in Marketing & Sales Management	12 Months	26
3. Textile Designing and Fashion Mapping	12 Months	20
4. Specialized Diploma in Computer	06 Months	192
5. Diploma in Textile Weaving	12 Months	90
6. Secretarial Sciences and Office Administration	12 Months	82
7. Computer Application	06 Months	06
8. Diploma in Wet Processing	12 Months	20
9. Oracle Professional Programme	06 Months	246
10. Software and Network Engineering	04 Months	35
11. Diploma in Internet Programming	06 Months	45
12. Diploma in Cosmetology	12 Months	10
13. Computer Training for Disable Persons	06 Months	<u>10</u>
Total		825

Source: 3 Years of skill Development Council, Developing Human Capital. SDC, Karachi.

Appendix Table 5
Protection and Efficiency in the Manufacturing
Industries of Pakistan

Code	Name of Industry	TFP- Index 90-91	Effective Protection Rate	Domestic Resource Cost	RCA 1995
04	Dairy Products	100.2	161	.56	-
05	Animal Products	-	113	-.37	-
07	Preservation of Vegetables	-	628	.75	-
09	Tea-blending	82.10	-1293	-.79	-
10	Rice-milling	108.80	201	.88	56.617(C)
11	Starches, Malt, Inulin	109.40	-802	-.38	0.387(I)
12	Oil Seeds, Misc. Grains	-	-362	-2.81	-
13	Vegetable Saps & Extracts	-	-1	1.14	-
15	Vegetable Oils & Hydro Oils	-	-505	-.44	-
17	Sugar and Confectionery	105.32	1532	7.42	31.205(C)
18	Cocoa & Its Preparations	-	254	.44	-
19	Preparations of Cereals	-	13	.52	-
20	Preparations of Vegetables	-	79	1.13	-
21	Other Edible Preparations	-	209	.61	-
22	Beverages/Spirits/Vinegar	-	-7	.16	-
23	Residue from Food Industry	-	90	.12	-
24	Tobacco Manufacturing	99.6	-87	.03	0.368(W)
25	Cement and Products	98.63	18	.37	0.597(I)
27	Petroleum and Products	98.6	-468	-.33	-
28	Inorganic Chemicals	-	98	.50	-
29	Organic Chemicals	-	195	.84	-
30	Pharmaceutical Products	98.70	235	.820	.348-0.747(I)
31	Fertilizers	104.86	83	.28	0.474(I)
32	Dye-stuffs, Pigments and Paints	96.60	119	.41	-
33	Cosmetics and Toiletries	101.31	97	.36	-
34	Soaps and Detergents	100.15	-467	-.68	-
36	Matches	103.64	395	.88	-
38	Other Chemical Products	99.70	1172	5.12	-
39	Plastic and Plastic Production	101.89	139	.47	-
40	Rubber and Rubber Products	89.99	35	.79	-
41	Raw Hides & Leather	95.22	-2337	-3.18	10.388(T)
42	Articles of Leather	99.01	174	.25	0.715(I)
44	Wood and Articles of wood	101.80	122	.81	0.152(W)
48	Paper, Board, and Products	98.94	21	.34	-
49	Postcards and Printing	109.22	347	1.70	-
50	Silk Textiles	106.95	119	.15	-
51	Woollen Textiles	101.45	50	.30	-
52	Cotton Textiles	102.23	41	.44	-
53	Other Vegetable, Textile, Paper	-	10	.35	-
54	Man-made Filament Textiles	-	136	.48	-
55	Man-made Staple Fibers	-	14	.42	-
56	Jute Textiles	101.24	-420	-.54	-
57	Carpets/Other Floor-covering	104.20	46	.65	10.542(T)
58	Embroidery, Laces	-	60	.49	-

Cont'd...Appendix Table 5

Cont'd...Appendix Table 5

Code	Name of Industry	TFP- Index 90-91	Effective Protection Rate	Domestic Resource Cost	RCA 1995
59	Impregnated Fabrics	-	-540	-.02	-

61	Knitted Fabrics	-	563	2.45	-
62	Garments	98.47	185	.51	-
63	Other Made-up Textiles	-	20	.27	-
64	Footwear	-	41	.40	-
68	Non-metallic Mineral Products	-	123	.91	-
69	Ceramic Goods	99.92	77	.55	-
70	Glass Products	105.47	63	.28	-
72	Iron and Steel	103.87	36	1.05	-
73	Articles of Iron and Steel	-	-4127	-9.12	0.670(I)
74	Copper Products	102.7	297	1.27	-
76	Aluminium Products	95.21	196	.79	-
79	Zinc Products	-	81	.14	-
80	Tin Products	112.42	3	.05	-
82	Metal Products	-	33	.43	-
83	Miscellaneous Articles of Base Metals	-	-	205	1.40 -
84	Non-electrical Machinery	102.32	264	.82	-
85	Electrical Machinery	101.58	383	.70	-
87	Motor Vehicles	96.83	-495	-.51	-
89	Ships and Boats	103.50	305	2.82	-
90	Optical, Photographic, and other Scientific Instruments	93.29	1653	7.30	2.949(T)
91	Clocks and Watches	-	652	1.53	-
92	Musical Instruments	-	-852	-1.13	0.520(I)
93	Arms and Ammunition	-	651	1.93	-
94	Furniture	109.4	275	.46	-
95	Toys, Games, Sports, etc.	-	74	.47	-
96	Misc. Manufactured Goods	-	2932	2.84	-

Source: 1. Total Factor Productivity (TFP) index are calculated by the authors. The base year is 1982-83.

2. The estimates of Effective Protection Rate and Domestic Resource cost are taken from Kemal, A.R., Z. Mahmood and A. M. Ahmed (1994), Structure of Protection, Efficiency, and Profitability (Volume II) PIDE, Islamabad.
3. RCA estimates are taken from Devon & Khan (1997). The notation in parentheses indicate the competitive grouping of the product. 'I' indicates competitively improving commodity. 'W' is weakly positioned group. 'P' is competitively positioned group and 'T' is threatened commodity groups.

Appendix Table 6

Unemployment and Underemployment Rates, 1968/69 to 1996/97

Period	Unemployment Rate			Underemployment Rate
	All Areas	Rural	Urban	Working Less than 35 hours/week -- all areas
1968/69	2.1	1.7	3.5	14.0
1969/70	2.0	1.8	2.9	8.3
1970/71	1.8	1.4	3.0	7.2
1971/72	2.0	1.7	3.7	8.4
1974/75	1.7	1.3	2.7	4.8
1978/79	3.5	3.0	5.2	13.0
1982/83	3.9	3.3	5.8	14.0
1984/85	3.7	2.9	5.7	9.2
1985/86	3.6	3.1	5.0	9.4
1986/87	3.1	2.5	4.5	10.0
1992/93	4.7	4.3	5.8	12.8
1993/94	4.8	4.2	6.5	13.2
1994/95	5.4	4.8	6.9	12.2
1996/97	6.1	5.7	7.2	11.5

Source: Labour Force Surveys.

Appendix Table 7
 Projected Unemployment Rate by Educational Level (Projection)

(In Percentage)

Period	Level of Education					
	Illit.	Pre.Mat.	Matric	Inter.	Degree+	Total
Scenario 1						
1998/99	5.44	6.07	7.9	8.4	9.0	6.2
1999/20	5.26	5.91	7.6	8.3	9.2	6.1
2002/03	4.71	5.43	6.8	8.05	9.8	5.7
2009/10	3.40	4.17	4.6	7.3	11.0	4.8
Scenario 2						
1998/99	7.6	8.2	10.0	10.5	11.1	8.4
1999/20	8.0	8.6	10.3	11.0	11.8	8.8
2002/03	9.1	9.8	11.0	12.3	13.9	10.0
2009/10	11.5	12.2	12.6	15.1	18.5	12.8
Scenario 3						
1998/99	8.1	8.7	10.5	10.9	11.5	8.8
1999/20	8.6	9.2	10.9	11.5	12.4	9.4
2002/03	10.0	10.7	11.9	13.2	14.8	10.9
2009/10	13.1	13.9	14.3	16.7	20.0	14.4
Scenario 4						
2009/10 (a)	-2.7	-1.7	-1.3	1.6	5.5	-1.11
2009/10 (b)	3.4	4.2	4.6	7.3	11.0	4.8

Source:

Scenario I =Availability of manpower increases at 2.77% while GDP = 7% elasticity = 0.42

II =Availability at 2.77, GDP 7% and elasticity = 0.33

III =Availability at 2.77, GDP = 5.24% and elasticity = 0.42

IV =(a) Relevant only for 2009/10 where labour force growth declines from 2.77 to 2.00 with GDP growth of 7% and elasticity = 0.42.

(b) Labour force growth constant at 2.77.