

RESEARCH REPORT NO.87
THE LABOUR MARKET AND TRAINING PROGRAMMES
FOR DIPLOMA HOLDERS FROM THE POLYTECHNIC
INSTITUTES IN PAKISTAN

by
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In designing any educational system or training institution, one has to take into account that the output - the human resource - will be used over a time-span of probably 30-50 years, and that during this period it will be used in ever changing production functions. One will, therefore, have to decide whether the training should emphasize the specific requirements of today or that of the future involving e.g. a training which develop ability to adopt new methods of production rather than to be too much concerned about the specific needs of today. To illustrate the problem, if we knew the contributions to, say, G.N.P. of two types of education, one giving high returns today, the other in the future, requiring equal expenditures, one way of deciding which type of training to be chosen would simply be to select the training yielding the highest discount rate. The trouble is, of course, that we do not know the future contributions of various types of training and, consequently, the basis for designing any educational system, not least in a less developed country, is weak indeed.

The purpose of this study is very limited in the sense that we just pick up a small fragment of the technical training in Pakistan for closer study and examination by confining our attention

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to the labour market and training programmes for the diploma holders from one of the Polytechnics in Pakistan, viz. Government Polytechnic Institute, Karachi. We believe that information about the extent to which the graduates (henceforth the words "graduate" and "diploma holder" may be inter-changeable) get appropriate jobs in Pakistan, the industries to which they are going, the salary structure, the extent to which a special type of graduates can substitute other types of graduates in the production process and the employers' views on the training the graduates get, are all information that may be of use to an educational planner. One has, however, to be careful in drawing definite conclusions from an investigation of just one Polytechnic Institute in Pakistan. Hopefully, therefore, this study may be an incitement for others to undertake further studies in the field of education and manpower in Pakistan.

In Section 1 is shown, as a background for this study, the proportion of all the diploma holders we are covering in West Pakistan by examining only the Government Polytechnic Institute, Karachi, as well as the methods used in collecting data. In Sections 2 and 3 we examine if the diploma holders have got appropriate jobs in Pakistan, to which industries they are going and their salary. In Section 4 we discuss the on-the-job training they get and the turnover problem. In Section 5 the employers' views on the training the diploma holders have got, are given.

Section 1

This study is, as stated above, confined to the Government Polytechnic Institute, Karachi. By taking this Institute, however, the survey covers, as shown in the table below, 25 per cent of all the diploma holders who graduated from the Government Polytechnics in West Pakistan in the period up to 1966-1967. If the private polytechnic institutes, and Pak-Swiss Training Centre and Swedish Pakistan Institute of Technology are included among the government polytechnic institutes, the coverage percentage comes to approximately 24 per cent. The table below shows the number of diploma holders who graduated from ^{the} Government Polytechnic Institute, Karachi and all the Polytechnic Institutes in West Pakistan by technology in the period upto 1966-67.

Table 1

Output of Government Polytechnic Institutes in West Pakistan and of Government Polytechnic Institute, Karachi

Technology	Auto. & Diesl		Civil		Electrical		Mechanical		Power		Radio & Electronics		Textile		Re & Air Condng.		Other Tech.		Total	Percentage from GPI Karachi	
	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi	Total	GPI Karachi			
1957-58	-	-	-	-	17	17	13	13	-	-	9	9	-	-	-	-	-	-	39	39	100,-
1958-59	11	11	-	-	6	6	15	15	-	-	5	5	-	-	-	-	-	-	37	37	100,-
1959-60	13	13	-	-	11	11	26	26	-	-	11	11	-	-	-	-	-	-	61	61	100,-
1960-61	-	-	-	-	25	25	25	25	16	16	13	13	-	-	-	-	-	-	79	79	100,-
1961-62	26	26	14	14	34	23	36	36	34	34	21	21	-	-	-	-	-	-	165	154	93.3
1962-63	69	40	21	21	154	24	163	35	41	41	40	29	-	-	-	-	-	-	488	190	38.9
1963-64	53	35	25	25	220	31	181	24	34	34	39	30	-	-	-	-	-	-	552	179	32.4
1964-65	127	25	240	33	281	41	294	37	32	32	74	20	19	19	13	-	106	-	1,138	207	17.4
1965-66	159	28	253	29	355	33	319	29	31	31	74	23	16	16	48	-	95	-	1,350	189	14
1966-67	165	32	274	31	378	34	298	40	14	14	59	28	15	15	77	22	93	-	1,373	216	15.7
Total	623	210	827	153	1,481	245	1,370	280	202	202	342	189	50	50	143	22	294	-	5,332	1,351	25.3
Percentage from GPI Karachi		33.7		18.5		16.5		20.4	100,-		55.3	100,-		15.4		-			25.3		

As shown in the table above, this survey covers all the diploma holders who graduated in West Pakistan in the period up to 1960-61. In the late fifties and the beginning of 1960's (see appendix) several new polytechnics were established and the coverage has been declining to about 14-16 per cent in the period 1965-67.

Information about the labour market has been obtained both from the diploma holders (or their parents) and the employers. Government Polytechnic Institute, Karachi advertised in the newspapers in the later part of 1965, requesting their diploma holders to submit their present addresses to the Institute. The Institute, then, in the beginning of 1966 dispatched questionnaires to the diploma holders of whom the addresses were known. By the end of 1967 responses from about 44 per cent of all the diploma holders who had graduated in the period up to 1966 had been received. Government Polytechnic Institute, Karachi made all the questionnaires, as well as all the other information it possessed, available for this survey. It also agreed to dispatch, in its name, questionnaires to the parents of the non-responding diploma holders and to the employers of the responding diploma holders. ^{1/} Only about 10 per cent of the employers responded. Some of the responses were rather incomplete or were not filled in at all. Therefore, all the firms in Karachi having more than 5 diploma holders were either interviewed or received the questionnaire through a visit. The organizations that did not

^{1/} See the questionnaires and the covering letters in the appendix. Note that the questionnaire sent to the parents is simpler than that sent to the diploma holders and less detailed information is, therefore, obtained about the diploma holders for whom the parents responded.

respond after the visit, were reminded several times either by a phone call or a new visit. As a result of all these efforts 31 fairly well filled in questionnaires from the employers were obtained.

About 35 per cent of the parents of the non-responding diploma holders responded to the questionnaire, bringing the information received about the diploma holders to 63.5 per cent of all the diploma holders. The table below shows the results of the efforts made in obtaining information from the diploma holders and the parents of the non-responding diploma holders.

Table 2

Number of Diploma Holders, Responding Diploma Holders, non-Responding Diploma Holders, and Responding Parents by technology

	Technology															
	Auto- mobile		Elect- rical		Mecha- nical		Power		Radio & Electr.		Civil		Text- ile		Total	
	Num- ber	%	Num- ber	%	Num- ber	%	Num- ber	%	Num- ber	%	Num- ber	%	Num- ber	%	Num- ber	%
Total Number of Graduates	178	100	224	100	249	100	198	100	163	100	122	100	36	100	1170	100
Number of Responding Graduates	62	34.8	91	40.6	111	44.6	87	43.9	78	47.9	65	53.3	19	52.8	513	43.8
Number of Non-responding Graduates	110	65.2	133	59.4	138	55.4	111	50.1	85	52.1	57	46.7	17	47.2	657	56.2
Number of letters sent to Parents of the Non-Responding Graduates	103	57.9	116	51.8	129	51.8	101	51.0	77	47.2	51	41.8	15	41.7	592	50.6
Responses from the Parents	45	25.3	43	19.2	49	19.7	39	19.7	25	15.3	19	15.6	10	27.8	230	19.7
Letters which did not reach the Parents	5	2.8	9	4.0	12	4.8	7	3.5	4	2.5	3	2.5	0	-	40	3.4
Parents who did not respond	53	29.8	64	28.6	68	27.3	55	27.8	48	29.4	29	23.7	5	13.9	322	27.5

As shown in the table there is a difference between the number of non-responding graduates and the number of letters sent to the parents because all the permanent addresses of the parents were not available in the Institute. 40 letters were returned because the parents had moved to a new address and 322 parents did not respond. It is, however, likely that in fact less than 322 parents received the letter because the parents do not any longer live at the same address as when the diploma holders were students, and those now living at this address did not send the questionnaire to the new address of the parents.

Section 2

According to the Prospectus 1962-1963 of the Government Polytechnic Institute, Karachi, the diploma holders are, after graduation, supposed to work as "a design assistant, research assistant, supervisor, foreman and junior engineer, and in such other supervisory positions."

The table below shows to what extent the diploma holders are in jobs they are supposed to have. The data from the diploma holders' and parents' responses are given in separate columns.

Table 3
Occupations of the diploma holders
All technologies

Occupations	Diploma holders' responses		Parents' responses		Total	
	Number	Percentage	Number	Percentage	Number	Percentage
<u>Total</u>	<u>513</u>	<u>100,-</u>	<u>230</u>	<u>100,-</u>	<u>743</u>	<u>100</u>
1 Own business	11	2.1	9	3.9	20	2.7
2 Managers	11	2.1	4	1.7	15	2.0
3 Engineers	115	22.4	59	25.7	174	23.4
4 Technicians	49	9.6	17	7.4	66	8.9
5 Supervisors, Overseers Foremen, Chargemen	131	25.6	57	24.8	188	25.3
6 Executives, Inspectors, Superintendents, Surveyors, Sales Officers	32	6.2	15	6.5	47	6.3
7 Mechanics, Operators	59	11.5	6	2.6	65	8.7
8 Instructors	26	5.1	3	1.3	29	3.9
9 Apprentices	11	2.1	3	1.3	14	1.9
10 Other Occupation	23	4.5	9	3.9	32	4.3
11 Students	6	1.2	1	0.5	7	1.0
12 Unemployed	16	3.1	12	5.2	28	3.8
13 Abroad	23	4.5	35	15.2	58	7.8

It appears that the diploma holders working in Pakistan are to a very large extent in occupations they are supposed to have. Almost 70 per cent of the diploma holders for whom information is available serve as managers, engineers, technicians, supervisors, overseers, foremen, chargemen, executives, inspectors, superintendents, surveyors, sales officers and instructors. These are occupations which in most cases require both technical insight and supervision of other people, a demand which the polytechnics are supposed to meet. The other polytechnic graduates who are employed in Pakistan work to a large extent in occupations requiring technical training such as mechanics and operators.

3.8 per cent of the diploma holders for whom information is available were unemployed and 7.8 per cent were abroad. However, if the parents' responses are taken to be representative of all the non-responding diploma holders the unemployment percentage for all the diploma holders comes to 4.3, and 10.5 per cent are likely to be abroad.

Almost 70 per cent of the diploma holders working in Pakistan were employed in Mining and Quarrying, Manufacturing, Construction, Electricity and Gas, and ⁱⁿ Airlines and other transport. The remaining graduates were employed in Public Administration, Communication, Wholesale and Retail Trade and Services, the two latter groups being the most important. The group 'Services' includes to a large extent services requiring highly skilled labour, such as that of an Engineering firm. Table 4 shows the industries in which the diploma holders are working.

Table 4

The industries in which the diploma holders are working

Name of Industry	Automobile		Electrical		Mechanical		Power		Radio & Electr.		Civil		Textile		Total		% distribution of the 1965-1966 GNP in West Pakistan	Diploma holders per unit of Gross Value Added, Total No. of diploma holders per unit of total GNP=100
	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%		
Mining and Quarrying	2	2.2	2	1.8	4	2.9	5	4.6	5	5.1	-	-	-	-	18	2.8	0.6	447
Crude Petroleum & Natural Gas	2	2.2	2	1.8	3	2.2	5	4.6	5	5.1	-	-	-	-	17	2.6	0.6	447
Stone Quarrying etc.	-	-	-	-	1	0.7	-	-	-	-	-	-	-	-	1	0.2		
<u>Manufacturing*</u>	36	39.2	41	37.0	84	60.4	48	43.6	23	23.2	7	8.5	19	95.0	258	39.8	13.3	299
Food Manufacturing Industries (except Beverage Industry)	1	1.1	-	-	3	2.2	3	2.7	-	-	-	-	-	-	7	1.1	2.0	55
Beverage Industries	1	1.1	-	-	-	-	-	-	-	-	-	-	-	-	1	0.2	0.1	200
Tobacco Manufacture	-	-	-	-	-	-	1	0.9	-	-	-	-	-	-	1	0.2	1.3	15
Manufacture of Textiles	1	1.1	4	3.6	2	1.4	2	1.8	-	-	1	1.2	15	75.0	25	3.8	3.9	97
Manufacture of Paper & Paper Products	-	-	-	-	2	1.4	1	0.9	-	-	-	-	-	-	3	0.5	0.3	167
Printing, Publishing & Allied Industries	-	-	-	-	-	-	1	0.9	-	-	-	-	-	-	1	0.2	0.2	100
Manufacture of Rubber Products except Rubber Footwear	1	1.1	-	-	-	-	1	0.9	-	-	-	-	-	-	2	0.3	0.2	150
Manufacture of Chemicals and Chemical Products	1	1.1	5	4.5	7	5.0	9	8.2	3	3.1	1	1.2	1	5.0	27	4.2	1.3	323
Manufacture of Products of Petroleum and Coal	-	-	2	1.8	1	0.7	9	8.2	-	-	-	-	-	-	12	1.8	0.8	225
Manufacture of non-metallic mineral products except Products of Petroleum and Coal	-	-	2	1.8	1	0.7	5	4.6	1	1.0	1	1.2	-	-	10	1.5	0.7	214
Basic Metal Industries	-	-	-	-	10	7.2	-	-	1	1.0	-	-	-	-	11	1.7	0.4	425
Manufacture of Metal Products except Machinery and Transport Equipment	-	-	2	1.8	3	2.2	-	-	1	1.0	-	-	-	-	6	0.9	0.3	300

*The share of manufacturing in total West Pakistan GNP is actually 14.5 per cent instead of 13.3. The remaining 1.2 per cent is included in the sector 'Others' (see footnote No.2 on next page)

Over

Table 4. Contd.

Name of Industry	: Automobile :		: Electrical :		: Mechanical :		: Power :		: Radio & : : Electr. :		: Civil :		: Textile :		: Total :		% distri- : bution of : the 1965- : 1966 GNP : in West : Pakistan	Diploma : holders per : unit of Gross : Value Added. : Total No. of : diploma holders : per unit of : total GNP=100
	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :	: No. :	: % :		
Manufacture of Machinery except electrical machinery	-	-	1	0.9	6	4.4	1	0.9	-	-	-	-	3	15.0	11	1.7	0.2	850
Electrical Machinery, Apparatus, Appliances and Supplies	-	-	20	18.0	17	12.2	4	3.6	16	16.6	1	1.2	-	-	58	8.9	0.5	1780
Manufacture of Transport Equipment	31	33.7	2	1.8	25	18.0	9	8.2	-	-	3	3.7	-	-	70	10.8	0.4	2700
Miscellaneous Manufacturing Industries	-	-	3	2.8	7	5.0	2	1.8	1	1.0	-	-	-	-	13	2.0	0.6	333
Construction	4	4.3	5	4.5	8	5.7	12	10.9	-	-	34	42.1	-	-	63	9.7	5.1	190
Electricity and Gas	5	5.4	12	10.8	1	0.7	8	7.3	-	-	-	-	-	-	26	4.0	1.0	400
Whole-sale & Retail Trade	11	12.0	11	9.9	11	7.9	8	7.3	15	15.5	3	3.7	-	-	59	9.1	13.0	70
Public Administration and Defence	5	5.4	4	3.6	2	1.4	3	2.7	4	4.1	7	8.7	1	5.0	26	4.0	8.1	49
Airlines & Other Transportation	13	14.1	20	18.0	15	10.8	16	14.5	21	21.7	3	3.7	-	-	88	13.4	6.1	244
Communication	-	-	-	-	1	0.7	2	1.8	7	7.2	-	-	-	-	10	1.5		
Agriculture	1	1.1	-	-	1	0.7	-	-	-	-	-	-	-	-	2	.3	38.6	0.8
Education and Research	5	5.4	5	4.5	6	4.4	5	4.6	7	7.2	6	7.4	-	-	34	5.2	8.70 ¹⁾	175
Services (N.E.S.)	10	10.9	11	9.9	6	4.4	3	2.7	15	15.5	20	24.7	-	-	65	10.0		
Others ²⁾	-	-	-	-	-	-	-	-	-	-	1	1.2	-	-	2	.2	5.5	3.6
Total:	92	100.0	111	100.0	139	100.0	110	100.0	97	100.0	81	100.0	20	100.0	650	100.0	100.0	100

1) Includes Banking and Insurance

2) Includes Manufactures of Footwear, other Wearing Apparel and Made-up Textile Goods, Manufacture of Wood, Cork and Allied Products, Manufacture of Furniture and Fixtures, Manufacture of Leather and Leather Products, except Footwear and Other Wearing Apparel and Ownership of Dwellings.

As shown in the table above, the diploma holders in Civil Technology went to a large extent to the Construction sector, Textile graduates to the Textile Industry, Automobile graduates to Manufacturing of Transport Equipment, while a great part of the diploma holders in the Electrical, Mechanical and Radio & Electronics technologies went to Airlines and other transportation and to Manufacturing of Electrical Machinery.

In the table above, we also show how the number of diploma holders varies per unit of Gross Value Added in different sectors. This is done by computing the share of total Gross Value Added in West Pakistan in each sector. The share of diploma holders is then divided by the share of Gross Value Added in each sector and an index is thus obtained showing the number of diploma holders per unit Gross Value added in every sector, assuming the total number of diploma holders per unit of total G.N.P. equal to 100. Since almost all the employed diploma holders who have graduated from Government Polytechnic Institute, Karachi are working in West Pakistan, this should give an impression of how the number of diploma holders per unit of Gross Value Added varies among sectors in West Pakistan.

As shown, the number of diploma holders per unit of Gross Value Added in Manufacturing industry is three times that of graduates per unit of total G.N.P. Moreover, the number of diploma holders per unit of Gross Value Added varies considerably in the different sectors within the Manufacturing industry. In particular, the sectors producing Electrical machinery and Transport Equipment seem to be heavy users of this special type of skill, absorbing 6 and 9 times, respectively, that of diploma holders per unit of Gross Value Added for the Manufacturing industry as a whole.

Although our findings may give some indication of the requirements of diploma holders by an increase in production, one has to be careful in relying too much on the index arrived at. The questionnaires obtained from the employers show that the technical skill composition varies considerably both among firms

in the same industry and between firms of different sizes (see appendix p.41). Moreover, there seems to be a large scope for substituting various types of skills for each other, as shown in the table below, where information from the employers' responses is given.

Table 5

Number of establishments having Engineering graduates and Diploma Holders from Government Polytechnic Institute, Karachi, and Diploma Holders from Government Polytechnic Institute, Karachi and Matriculates with some technical training, respectively, in the same occupation

	Number of firms (having both skills in the same occupation)	Number of firms (having both skills in their service)	Total Number of firms from which informa- tion was obta- ined
Engineering graduates and Diploma Holders from Govern- ment Polytechnic Institute, Karachi	10	22	31
Diploma Holders from Govern- ment Polytechnic Institute, Karachi and Matriculates with some technical training	10	20	31

Average pay at the start for those working in the same occupation

Engineering graduates	019,-	Rs. per month
Diploma Holders from GPI, Karachi	508,-	" " "
Diploma Holders from GPI, Karachi	308,-	" " "
Matriculates with some technical training and experience	220,-	" " "

As seen in the table above, about half of the establishments which reported that they had both Engineers and Diploma Holders in their service, had these two skill categories in the same occupation. Moreover, one half of the establishments which had Diploma holders and Matriculates in their service also reported that they had these two skill categories in the same occupation.

The diploma holders seem to have increasingly difficulties in obtaining an appropriate job. The table below shows the time period between the date of graduation and first job, as well as the unemployment percentages by year of graduation

Table 6
and percentage who have been employed in Pakistan
The number/of diploma holders/in various brackets of time periods (months) between date of graduation and first job, and unemployment percentages (the parents' responses are assumed to be representative for all the non-responding diploma holders) by year of graduation

Yr. of gradn Mths.	1958		1959		1960		1961		1962		1963		1964		1965		1966		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
0-3	14	70	11	78.7	15	71.4	16	69.6	14	31.8	37	54.4	76	64.4	51	44.3	20	43.5	254	54.2
0-6	17	85	12	85.8	18	85.7	19	82.0	32	72.7	55	80.9	97	82.2	81	70.4	30	65.2	301	77.0
0-12	18	90	13	92.9	19	90.5	22	95.6	42	95.4	65	95.6	110	93.2	111	96.5	46	100	440	95.1
0-12 & more	20	100	14	100	21	100	23	100	44	100	68	100	118	100	15	100	46	100	469	100
Unempl- oyment % All tech- nologies		2.5	-	-	-	-	-	-	0.7	0.5	1.9	2.9	14.6	3.8						
Auto- mobile	-	-	-	-	-	-	-	-	-	-	-	-	7.3	1.2						
Civil	-	-	-	-	-	-	-	-	-	-	-	-	3.4	0.8						
Elec- trical	-	-	-	-	-	-	-	-	3.6	-	2.4	23.6	5.4							
Mecha- nical	-	-	-	-	-	-	3.0	-	-	-	-	21.8	4.5							
Power	-	-	-	-	-	-	-	-	-	-	12.8	9.4	5.3	4.4						
Radio & Elect.	-	-	-	-	-	-	-	-	-	-	-	-	-	-						
Textile	-	-	-	-	-	-	-	-	-	-	-	11.8	32.6	24.4						

In the period 1958-1961 more than 70 per cent of the diploma holders reporting the date of the first job got employment within 3 months after graduation, while in the period 1962-1966 considerably less got a job within the same period. Moreover, for 1965 and 1966

Over

about 30-35^{per cent} as compared to an average of less than 20 per cent in the previous years did not have a job within half a year after graduation.

The unemployment percentages are also higher for those graduating in the later years. Thus 14.6 per cent of those graduating in 1966 were unemployed. The worst hit were diploma holders with training in Electrical, Mechanical and Textile technology.

In evaluating the unemployment percentages, one has to take into account, however, that the number of observations for 1966 is not greater than 25 in any of the technologies. (see appendix p.38). Thus, a few casually unemployed influence the unemployment percentages considerably. Moreover, some of the responding diploma holders who reported themselves to be unemployed may have submitted their questionnaires within a rather short period after graduation, and may, therefore, have been in the process of searching for a suitable job.

However, the tendency towards a buyer's market for diploma holders, which the table above reveals, was confirmed in the interviews with the employers. The employers felt that it was easier to hire a diploma holder today than some years ago. The usual hiring practice was to advertise in the newspaper, and the employers got at least 5-10 applications for each vacancy. In the period just after the exams, the number could be as high as 50 applications per vacancy.

Section 3

Information of the present salary of the diploma holders (including allowances) was obtained from the questionnaires returned by the responding diploma holders. As these questionnaires were returned to the Government Polytechnic Institute, Karachi over a period of almost two years from the beginning of 1966 to the end of 1967 and the dates to which the salaries are referring are not given, the information about the earnings should best be taken

as an average for the two year period. The table below shows the salary of the diploma holders who have graduated from the Government Polytechnic Institute, Karachi since its establishment.

Table 7

Average monthly salary earned by diploma holders from Government Polytechnic Institute, Karachi employed in Public and Private organizations in Pakistan
(Those who are abroad, those who kept their income confidential, those having own business and who are students are excluded)

	Total		Private		Public Government & Semi-Government	
	Number	Average Salary	Number	Average Salary	Number	Average Salary
1958	16	774	11	895	5	508
1959	11	612	3	700	8	580
1960	21	609	15	692	6	402
1961	20	500	9	593	11	424
1962	40	476	17	527	23	438
1963	64	447	25	546	39	383
1964	105	434	39	535	66	375
1965	116	332	56	347	60	317
1966	46	348	23	387	23	289
Total	439		198		241	

The average income for those who graduated in 1958 was 774 rupees per month declining gradually to 330-340 rupees per month in 1965-1966. 55 per cent of the diploma holders were employed in Government and Semi-Government organizations. The diploma holders employed in private organizations earned considerably more; in some years their emoluments exceeded by upto 75 per cent the earnings of those working in Government and Semi-Government organizations. Diploma holders in the automobile and textile technologies earned less than average

income while graduates in the electrical technology earned more than average (see the appendix p.43).

Since the income data are referring to different dates over almost a two years period, it is necessary to be careful in drawing conclusions about the reasons for variation in income of diploma holders having the same training and experience. However, deviation from the average above a certain amount must be explained by factors other than the date of observation. Below, we try to see if there is any relationship between grademarks obtained in the Polytechnic Institute and income of diploma holders having the same training and experience, or if foreign firms in Pakistan are paying more or less than Pakistani firms. The table below shows the number of diploma holders having 30 per cent more and 30 per cent less than average income and their grademarks.

Table 8

Number of diploma holders having grademarks better and worse than average of those earning 30 per cent more and 30 per cent less than average income, respectively 1)

	Private Organizations		Government & Semi-Government organizations	
	No.	Percentage	No.	Percentage
<u>Graduates earning 30 per cent more than average income</u>	25	100,-	17	100,-
of whom having more than average grademarks	11	44,-	9	52.9
of whom having less than average grademarks	11	44,-	5	29.4
of whom grademarks have not been available	3	12,-	3	17.7
<u>Graduates earning 30 per cent less than average income</u>	26	100,-	14	100,-
of whom having more than average grademarks	10	38.5	6	42.8
of whom having less than average grademarks	13	50,-	6	42.8
of whom grademarks have not been available	3	11.5	2	14.4
<u>Total number of diploma holders for whom income data are available</u>	198		124	

1) The figures in the table above are arrived at by selecting diploma holders earning 30 per cent more and 30 per cent less than average income of the "group" to which they belong. By "group" is meant those belonging to a specific year of graduation and technology split up between public and private sector, respectively. The grademarks of those thus selected are compared with the average grademarks of their group to see if they are

The table above shows that of those earning 30 per cent more than average income in the private sector and of those earning 30 per cent less than average in the public sector, an equal number had better and worse grademarks than average. However, there may be, as the table indicates, a positive correlation between grademarks and income for the diploma holders in the public sector earning 30 per cent more than average and for those earning 30 per cent less than average income in the private sector. The overall impression of the figures in the table above indicates, however, that there is hardly any significant relationship between income and grademarks for the diploma holders as a whole.

Neither salaries seem to depend, as shown in the table below, on whether the diploma holders are employed in foreign or private firms in Pakistan.

Table 9

Number of diploma holders earning 30 per cent more and 30 per cent less than average income and who are working in Foreign firms in Pakistan and Pakistani private organizations as compared to total number of diploma holders in the same organizations

Responding diploma holders	Total		Foreign firms		Pakistani firms	
	No.	Percentage	No.	Percentage	No.	Percentage
Graduates earning 30 per cent more than average	25	100	4	16,-	21	84,-
Graduates earning 30 per cent less than average	26	100	6	23.1	20	76.9
Total number of diploma holders for whom income data have been available	198	100	45	22.7	153	77.3

About 23 per cent of the diploma holders for whom income data are available and who are working in private organizations in Pakistan were employed in foreign firms. The corresponding figures for those earning 30 per cent more than average and 30 per cent less than average are 16 and 23 per cent, respectively.

It can, therefore, hardly be concluded that it is of significant importance for his salary whether a diploma holder works in a firm of foreign origin or in a Pakistani private firm.

Other possible explanations for the variation in income may be promotion within the firm and that the pay-scale differs from firm to firm, but the information available does not permit a test of these hypotheses.

Section 4

Turnover is almost ignored in traditional theory. In the usual analysis of competitive firms, wages equal marginal product, and since wages and marginal product are assumed to be the same in many firms, no one really suffers from turnover and it would not matter whether a firm's labour force was rapidly changing. Any person leaving one firm could do equally well in other firms, and his employer could replace him without any change in profits.

Turnover becomes important, however, when costs, which may be the effects ^{of} on-the-job training, are imposed on workers or firms. Suppose a firm paid all the training costs of a worker who quit after completing it and a new one was hired in his place. If the new employee were not given training, his marginal product would be less than that of the one who quit since presumably training raised the latter's productivity. In other words, a firm is hurt by the departure of a trained employee if an equally profitable new employee could not be obtained. Moreover, if the on-the-job training the employee who quit has got is of little use in the new firm, a loss to the overall production in the society may have occurred.

Information about turnover and on-the-job training was collected from the diploma holders and their employers. As

far as on-the-job training is concerned, the questionnaires and the interviews gave the impression that few firms had special training programmes for technically trained people. The training was in most cases some sort of on-the-job instruction and the period of such guidance may be difficult to define. This must be kept in mind in evaluating the table below where the period of on-the-job training is given as reported by the employers.

Table 10

The number of firms giving on-the-job training for Engineering graduates, Diploma holders from GPI, Karachi and Matriculates with some technical training and experience in various brackets of period of training

Period of training .Months	Engineering graduates		Diploma holders from GPI, Karachi		Matriculates with some technical training and experience	
	No.	Percentage	No.	Percentage	No.	Percentage
nil	8	38.1	6	24.0	7	38.9
0-6	9	42.8	11	44.0	5	27.8
6-12	1	4.8	5	20.0	4	22.2
12 & more	3	14.3	3	12.0	2	11.1
Total number of firms which gave information about on-the-job training	21	100.0	25	100.0	18	100.0

On-the-job training seems, as shown in the table above to be more common for Diploma holders from Government Polytechnic Institute, Karachi than for Engineers and Matriculates. Thus about 75 per cent of the firms have been imparting on-the-job training to the Diploma holders, while only about 60 per cent of the firms provided for such training to Engineers and Matriculates. On-the-job training was in^a very few cases imparted to technically trained personnel for 1 year or more.

Information of turnover was obtained from the diploma holders' responses. From the information available we are only able to show the frequency of turnover, but not what may be the

loss to the employers as a result of turnover, or the gain to the diploma holders. The table below shows how often the diploma holders from Government Polytechnic Institute, Karachi have changed their jobs.

Table 11

The frequency of job-change of the responding Polytechnic graduates who have been employed in Pakistan

Year of graduation	1958		1959		1960		1961		1962		1963		1964		1965		1966		Total	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Total	21	100	14	100	23	100	23	100	45	100	70	100	117	100	127	100	50	100	490	100
Number who did not quit	9	42.9	5	35.7	3	13.0	7	30.4	17	37.8	37	52.9	71	60.7	93	73.2	32	64	274	55.9
Number who left at least once	12	57.1	9	64.3	20	87.0	16	69.6	28	62.2	33	47.1	46	39.3	34	26.8	18	36.0	216	44.1
Number who left at least twice	7	33.3	3	21.4	15	65.2	10	43.5	13	28.9	12	17.1	11	9.4	5	3.9	7	14.0	83	16.9
Number who left thrice or more	2	9.6	1	7.1	3	13.0	4	17.4	6	13.3	3	4.3	7	6.0	0	-	0	-	26	5.3

44 per cent of the responding diploma holders have left their jobs at least once, 17 per cent at least twice and 5 per cent three times or more. As might be expected more of the diploma holders who graduated in the earlier years have changed their jobs more times than those who graduated in later years. Thus 67 per cent of the diploma holders who graduated in the period upto 1962 had left their jobs at least once, 40 per cent at least twice and 13 per cent three times or more. Most of the diploma holders graduating in the period up to 1962 left their first job, as shown in the

Over

table below, after a period of service of 1-3 years, while most of those graduating later left the first job after less than 1 year of service.

Table 12

Number of responding diploma holders and period of service of those who left first job by year of graduation

	1958		1959		1960		1961		1962		1963		1964		1965		1966	
	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%	No	%
Number who left first job	12	100,-	9	100,-	19	100,-	16	100,-	27	100,-	32	100,-	40	100,-	32	100,-	15	100,-
Period of Service:																		
0-1 year	3	25.0	2	22.2	6	31.7	7	43.8	12	44.0	19	59.4	29	63.0	30	93.8	14	93.3
1-3 years	5	41.7	5	55.6	12	63.1	9	56.2	15	55.6	13	40.6	17	37.0	2	6.2	1	6.7
3 & more yrs.	4	33.3	2	22.2	1	5.2	-	-	-	-	-	-	-	-	-	-	-	-

The reasons for leaving the job, as mentioned both by employers and employees, are given below in order of importance

1. Better pay and prospects elsewhere. In some government and semi government organizations, they did not get the promotion they deserved because the rules took more into account seniority than merits.
2. Wanted to go abroad for employment and higher training and studies.
3. Some left to remain closer to their families.
4. Transportation problems.
5. Service conditions in the establishment.
6. Resignation/Termination (due to retrenchment).

Some of the employers said that a few diploma holder had left because they, as supervisors, were unable to control the workers.

Some of the diploma holders also mentioned misbehaviour of the management, health reasons and lack of security of the job as reasons for leaving the job.

Section 5

4 of 31 firms found the training at Government Polytechnic Institute, Karachi on the whole excellent, 18 fair, 2 inadequate and 7 gave no information. Some of the firms thought that the diploma holders graduating some years ago were better than those graduating today. They generally felt that there was too little contact and discussion with the Institute about the training of the diploma holders. Below is the employers' views on the major weaknesses and virtues, and suggestions for improvements of the training programmes at Government Polytechnic Institute, Karachi.

Major weaknesses of the training at Government Polytechnic Institute, Karachi

1. Lack of ability in applying theoretical knowledge on practical problems including lack of confidence in handling machines.
2. Production knowledge very much lacking.
3. Unable to work independently especially because of inadequate practical knowledge and training. (However, after a period of guidance for 6-12 months they are able to work independently.)
4. Wrong attitude; they are over ambitious, want very much to control other people and are unwilling to work with their own hands.
5. As supervisors they are frequently unable to control the workers partly because of lacking practical experience and insight into human behaviour.
6. Although the theoretical training for many jobs is adequate, improvement is necessary for some jobs, e.g. for diploma holders taking up assignments in the field of design and drafting.
7. The training should be given on the most modern equipment.
8. A few firms reported them to lack initiative and to be slow to learn.
9. A few firms reported ^{the} ~~lack of ability~~ ^{of the diploma holders} ~~in~~ expressing themselves orally and in writings.

Major virtues of the training at Government Polytechnic Institute, Karachi

1. After one year the good diploma holders become useful and efficient and they fill up the gap between engineers and workers, or between the engineers and ordinary draughtsmen.

2. Diploma holders are quite willing to take instructions from the engineers and to become good assistants to the engineer.
3. Since the engineers are given mainly theoretical training, the good diploma holder with practical experience becomes a good supplement in the practical field to the engineers.
4. Their knowledge of theory is in most cases adequate, although some firms report their knowledge of theory to be rather scanty.
5. Some of the employers report them to be hard working.

Important suggestions for improvement

1. It should be required at least one year of apprenticeship in related industries before obtaining diploma. This may be done either before admittance into the Polytechnic Institutes or during the training in the Polytechnic Institutes.
2. More training in management, human relations and how to deal with subordinates.
3. The Polytechnic Institutes must try to change the attitude of the students, and tell them that they as diploma holders still have a lot to learn.

In evaluating the suggestions for improvement, one has to consider the costs and benefits. Improvements in the training programmes should, of course, be introduced if it is possible to increase the benefits without increasing the costs e.g. through a training which to a larger extent emphasize the importance of accepting practical work.

When improvements involve additional costs, as it may for e.g. an apprentice programmes, one will have to decide whether these should be imposed on the private or public sector. In the case the public sector is going to cover these expenditures it may be looked upon as a subsidy to the private business. If, on the other hand, the costs have to be covered by the industry, every firm which is going to participate has to be convinced that its benefits will justify the expenditures.

Final remarks and conclusions

It appears that the diploma holders from Government Polytechnic Institute, Karachi are to a very large extent employed in jobs they are expected to have. There seems, however, to be a

tendency during the last years towards a buyer's market for diploma holders from the Institute.

There is a strong feeling among the employers that there should be a better contact between them and the Institute, e.g., in the form of an advisory board at the Institute, in order to make the training more suited to the needs of the industry. There seems, however, to be a general agreement that more stress should be laid on practical training, management training and attempts to change the attitude of the diploma holders so that practical work becomes more acceptable.

Whether these findings are applicable to other polytechnics in Pakistan remain unknown. The fact that Government Polytechnic Institute, Karachi is situated in a highly industrialized and expanding area may make it easier for the diploma holders from this Institute to find suitable jobs than for those from the other 16 polytechnic institutes in West Pakistan and the 16 institutes in East Pakistan. Also, the large increase in the output of diploma holders to be expected in the future years ^{from these institutes} makes it important to extend this type of analysis to future years. What is first of all needed, however, ^{to get} is an overall picture of the present labour market and training programmes for all diploma holders who have graduated from the polytechnics in Pakistan. Finally, for the future years arrangements should be made ^{for diploma holders} to report the first job immediately or after, say, 1/2 a year after graduation if they did not get suitable employment.

Based on such information, actions could be taken to plan the training programmes and the output of diploma holders in accordance with the requirements of the industry.

AppendixList of Polytechnic Institutes in West Pakistan

<u>Lahore Region</u>	<u>Year of Establishment</u>
1. Government Polytechnic Institute, Rawalpindi ...	1958
2. Government Polytechnic Institute, Lahore ...	1961
3. Government Polytechnic Institute, Sialkot ...	1963
4. Government Polytechnic Institute, Bahawalpur ...	1963
5. Government Polytechnic Institute, Peshawar ...	1963
6. Government Polytechnic Institute, Multan ...	1965
7. Government Polytechnic Institute, Lyallpur ...	1966
 <u>Karachi Region</u>	
<u>Government Sector:</u>	
1. Government Polytechnic Institute, SITE, Karachi-16	1955
2. Government Polytechnic Institute, Khairpur Mirs.	1958
3. Government Polytechnic Institute, Wahdat Colony, Hyderabad ...	1962
4. Government Polytechnic Institute, Seriab Road, Quetta	1965
5. Government Polytechnic Institute, Larkana ...	1966
 <u>Private Sector:</u>	
1. Jinnah Polytechnic Institute, Block V, Nazimabad, Karachi ...	1961
2. Saifee Eide Zahabi Institute of Technology, Frere Road, Karachi ...	1963
3. Habib Institute of Technology, Nawabshah ...	1963
 <u>Others:</u>	
1. Swedish Pakistan Institute of Technology, Karachi	1957
2. Pak-Swiss Training Centre, Karachi ...	1965

List of Polytechnic Institutes in East Pakistan

	<u>Year of establishment</u>
1. Dacca Polytechnic Institute, Tejgaon, Dacca-8 ...	1955
2. Chittagong Polytechnic Institute, P.O. & District Chittagong ...	1962
3. Barisal Polytechnic Institute, P.O. and District Barisal ...	1962
4. Bogra Polytechnic Institute, P.O. and District Bogra ...	1962
5. Pabna Polytechnic Institute, P.O. and District Pabna ...	1962
6. Rangpur Polytechnic Institute, P.O. and District Rangpur ...	1962
7. Sylhet Polytechnic Institute, P.O. and District Sylhet ...	1962
8. Khulna Polytechnic Institute, P.O. Muzgunni, Khulna	1963
9. Comilla Polytechnic Institute, Kothari, Comilla	1963
10. Faridpur Technical Institute, P.O. & District Faridpur ...	1963
11. Mymensingh Polytechnic Institute, P.O. and District Mymensingh ...	1963
12. Rajshahi Technical Institute, P.O. Sohpara, Rajshahi	1963
13. Dinajpur Technical Institute, P.O. and District Dinajpur ...	1964
14. Feni Technical Institute, P.O. Feni, District Noakhali	1964
15. Jessore Technical Institute, P.O. & District Jessore	1964
16. Kushtia Technical Institute, P.O. & District Kushtia	1964

Questionnaire sent to the diploma holders

D.O.No.
GOVERNMENT OF WEST PAKISTAN
KARACHI POLYTECHNIC
...

karachi-16,

19 .

My dear Graduate,

I would like to thank you for your quick response to my request in connection with the Graduates' Directory. You would be pleased to know that, with the Grace of Allah, the number of your fellow-graduates from Karachi Polytechnic Institute has already exceeded 950. Throughout Pakistan as well as outside the country your fellow-graduates are serving in many important organizations with important assignments. We all should feel proud of the Institute which is actively engaged in providing technicians for the Nation Building Projects.

The purpose of the proposed Directory for which this information is being collected will be multifold:

1. It will serve as a Guide to find out as to where the graduates are and what are they doing.
2. It will also provide an Index of different organizations where these graduates are working and any of you can locate readily if a fellow graduate is working in some organization you want to find out.
3. It will also serve as a Location Index by district and division so that when you visit a particular place you may be able to extend your social contact with other graduates of Karachi Polytechnic.
4. It will also serve as a quick Guide to various employing agencies who would like to find out the importance of your education when they refer to list important industries in which you or your fellow-graduates are employed.

We propose to print photo of 2½" x 1½", so that you can recognise faces of your friends and others who may have joined this fraternity since your graduation.

I would, therefore, request you to fill up the enclosed proforma giving full particulars of your employment, since your graduation, along with a passport size photo, and return the same immediately.

One must develop a fraternal feeling towards the graduates of the Institute he has studied. I am hopeful that publication of this Directory will go a long way in inculcating this brotherly spirit in all the graduates of the Karachi Polytechnic.

At some suitable time it is possible to hold a Convention of all the graduates of Karachi Polytechnic which will provide a forum to benefit from your experiences and consider ways and means for further professional development.

Your cooperation in furnishing the particulars required shall be very highly appreciated.

Yours sincerely,

Placement Officer
Mr.-----

Mir Mohammed Ali
Principal

No.
GOVERNMENT OF WEST PAKISTAN
KARACHI POLYTECHNIC

Karachi-16,

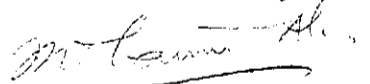
1967.

Dear parents,

Some time ago I sent a letter to your son/
ward Mr. _____ asking
him about his present address, occupation, etc., but
so far we have received no answer. The previous letter
may have been misplaced/misdelivered. As we are preparing
a Graduates' Directory, we would appreciate if you would
fill in the informations in the enclosed form and return
it to the Institute.

Encl: One form

Yours faithfully,



(Mir Mohammad Ali)
Principal

تاریخ

کراچی پولی ٹیکنیک

حکومت مفریہ پاکستان ، کراچی

محترمی ، تسلیم

کچھ دن پہلے میں نے ایک مراسلہ آپ کے فرزند / زیر سرپرستی

ان کے موجودہ روزگار اور پتے سے متعلق معلومات فراہم کرنے
کے لئے روانہ کیا تھا مگر ابھی تک ان کا کوئی جواب موصول نہیں ہوا - ممکن ہے
متذکرہ مراسلہ انہیں نہ ملا ہو - اس مراسلے کی غایت یہ ہے کہ ہم ایک
" گریجویٹ انٹرکشی " مرتب کر رہے ہیں جس کے لئے ہمیں آپ کے فرزند / زیر سرپرستی
کی بابت منسلکہ فارم میں مذکور معلومات

درکار ہیں -

ہمیں امید ہے کہ جناب والا ، ہماری مہربانہ معلومات فراہم کر کے

متشکر فرمائیں گے -

مخفی
(میر محمد علی)
پرنسپل
۸۷۶ | ۱۱ | ۱۱

dated

1967

The Principal
Karachi Polytechnic Institute
Karachi-16

Form

1. Name and present address
of my son/ward (Residential):

2. Present address of my
son/ward (Office):

3. Year of graduation _____ Reg. No: _____

Technology: _____

4.

Name of organization for which he is working	Designation	Serving from	Nature of Duties

Remarks:

Name of father/guardian

No.
GOVERNMENT OF WEST PAKISTAN
KARACHI POLYTECHNIC

Karachi-16,

1967

The Personnel Manager

Dear Sir,


As this Institute feels it important to know how you evaluate our diploma graduates, we would appreciate having your answer on the enclosed questionnaire. We are going to make a study based upon the questionnaire and feel it very important to take your views into account. The study will be completed in a couple of months. The purpose of this study is to evaluate the present training programme and consider ways and means for its improvement-based on employer's views. The survey will of course be made available to you.

In order to take your evaluation into account, therefore, it will be necessary to have your response within two weeks. Information furnished by you shall be kept confidential, if you so desire.

Your cooperation shall be very highly appreciated.

Yours faithfully,

Encl: Two copies of the
questionnaire


(Mir Mohammad Ali)
Principal

Firms employing diploma holders from
Government Polytechnic Institute, Karachi

Name of the organization:

Address:

Telephone:

Name of Industry
or main product:

1. What is the number of employees in your firm?
2. How many engineering graduates do you have in your firm?
3. How many diploma holders from Government Polytechnic Institute, Karachi do you have?
4. How many matriculates with some technical training and experience do you have?
5. How much do you pay (including allowances) engineering graduates at the start?

Job classification			
Rs. per month			

6. How much do you pay (including allowances) diploma holders from Government Polytechnic Institute at the start?

Job classification			
Rs. per month			

7. How much do you pay (including allowances) matriculates with some technical training and experience at the start?

Job classification			
Rs. per month			

8. How much further on-the-job training do you give to:

a. Engineering graduates? months

b. Diploma holders from Government Polytechnic Institute, Karachi? months

c. Matriculates employed in the technical field? months

9. Do you have matriculates with some technical training and experience and diploma holders from Government Polytechnic Institute, Karachi in the same occupation or doing basically the same job.

Yes

No

10. If yes, please specify their occupation and their emoluments at the start in the table below:

	Matriculates	Diploma holders {from Government Polytechnic Institute, Karachi
Job classification	Rs. per month	Rs. per month

11. Do you have diploma holders from Government Polytechnic Institute, Karachi and engineering graduates in the same occupation or doing basically the same job.

Yes

No

12. If yes, please specify their occupation and their emoluments at the start in the table below:

	Diploma holders {from Government Polytechnic Institute, Karachi	Engineering graduates
Job classification	Rs. per month	Rs. per month

13. How many diploma holders from Government Polytechnic Institute, Karachi have you employed since 1958?

14. How many of these diploma holders have left your establishment:

<u>Period of Service</u>	<u>No. of those left</u>
0 - 1 year	
1 - 2 years	
3 and over	

15. If some of the diploma holders have left your establishment, what do you think were the main reasons?

16. Do you have diploma holders from institutes, other than Government Polytechnic Institute, Karachi?

Yes

No

17. If the answer to question No. 16 is yes, please give the number of such diploma holders.

18. What do you think are the major weaknesses of the training at Government Polytechnic Institute, Karachi?

19. What do you think are the major virtues of the training at Government Polytechnic Institute, Karachi?

Table 13

Total number of diploma holders, responding diploma holders, non-responding diploma holders and responding parents by year of graduation and type of training

	Technology					Total
	Automobile	Electrical	Mechanical	Power	Radio & Electronics	
<u>1958: Total Number of Graduates</u>		<u>17</u>	<u>14</u>		<u>2</u>	<u>40</u>
Number of Responding Graduates		9	6		6	21
Non-Responding Graduates		8	8		3	19
Number of letters sent to the Parents		8	8		3	19
Responses from the Parents		0	0		0	0
Letters which did not reach Parents		1	1		1	3
Parents who did not respond		7	7		2	16
<u>1959: Total Number of Graduates</u>	<u>9</u>	<u>5</u>	<u>12</u>		<u>5</u>	<u>31</u>
Number of Responding Graduates	3	2	6		3	14
Non-Responding Graduates	6	3	6		2	17
Number of letters sent to the Parents	5	3	5		1	14
Responses from the Parents	3	0	1		0	4
Letters which did not reach Parents	1	1	1		1	4
Parents who did not respond	1	2	3		0	6
<u>1960: Total Number of Graduates</u>	<u>11</u>	<u>8</u>	<u>21</u>		<u>10</u>	<u>50</u>
Number of Responding Graduates	7	3	11		3	24
Non-Responding Graduates	4	5	10		7	26
Number of letters sent to the Parents	4	4	9		6	23
Responses from the Parents	1	2	5		0	8
Letters which did not reach Parents	0	0	0		0	0
Parents who did not respond	3	2	4		6	15

Over

Table 13 Contd.

	Technology						Total
	Automobile	Electrical	Mechanical	Power	Radio & Electronics	Civil	
1961: Total Number of Graduates	<u>4</u>	<u>26</u>	<u>30</u>	<u>17</u>	<u>11</u>		<u>88</u>
Number of Responding Graduates	1	8	7	4	3		23
Non-Responding Graduates	3	18	23	13	8	5	65
Number of letters sent to the Parents	2	14	21	11	8		56
Responses from the Parents	0	6	3	2	3		14
Letters which did not reach Parents	1	1	4	2	0		8
Parents who did not respond	1	7	14	7	5		34
1962: Total Number of Graduates	<u>21</u>	<u>22</u>	<u>33</u>	<u>29</u>	<u>18</u>	<u>11</u>	<u>134</u>
Number of Responding Graduates	5	5	15	7	10	5	47
Non-Responding Graduates	16	17	18	22	8	6	87
Number of letters sent to the Parents	16	15	18	17	6	6	78
Responses from the Parents	7	2	7	4	1	1	22
Letters which did not reach Parents	2	4	2	2	0	0	10
Parents who did not respond	7	9	9	11	5	5	46
1963: Total Number of Graduates	<u>40</u>	<u>28</u>	<u>38</u>	<u>42</u>	<u>35</u>	<u>24</u>	<u>214</u>
Number of Responding Graduates	11	6	18	14	17	7	73
Non-Responding Graduates	29	22	20	35	18	17	141
Number of letters sent to the Parents	25	21	18	33	16	14	127
Responses from the Parents	11	10	7	14	7	7	56
Letters which did not reach Parents	0	0	0	2	1	1	4
Parents who did not respond	14	11	11	17	8	0	67

Over

Table 13 Contd.

	Technology							Total
	Automobile	Electrical	Mechanical	Power	Radio & Electronics	Civil	Textile	
<u>1964</u> : Total Number of Graduates	<u>38</u>	<u>38</u>	<u>30</u>	<u>39</u>	<u>29</u>	<u>23</u>		<u>197</u>
Number of Responding Graduates	18	25	18	29	18	15		123
Non-Responding Graduates	20	13	12	10	11	8		74
Number of letters sent to the Parents	16	11	10	9	10	8		64
Responses from the Parents	9	3	5	2	2	5		26
Letters which did not reach Parents	0	1	1	0	0	1		3
Parents who did not respond	7	7	4	7	7	2		34
<u>1965</u> : Total Number of Graduates	<u>25</u>	<u>41</u>	<u>35</u>	<u>32</u>	<u>22</u>	<u>35</u>	<u>17</u>	<u>207</u>
Number of Responding Graduates	13	21	20	28	12	24	14	132
Non-Responding Graduates	12	20	15	4	10	11	3	75
Number of letters sent to the Parents	11	18	15	4	10	11	1	70
Responses from the Parents	5	7	9	1	2	3	1	28
Letters which did not reach Parents	1	1	1	0	0	1	0	4
Parents who did not respond	5	10	5	3	8	7	0	38
<u>1966</u> : Total Number of Graduates	<u>30</u>	<u>39</u>	<u>36</u>	<u>32</u>	<u>24</u>	<u>29</u>	<u>19</u>	<u>209</u>
Number of Responding Graduates	4	12	10	5	6	14	5	56
Non-Responding Graduates	26	27	26	27	18	15	14	153
Number of letters sent to the Parents	24	22	25	27	17	12	13	140
Responses from the Parents	9	14	11	16	10	3	9	72
Letters which did not reach Parents	0	0	2	1	1	0	0	4
Parents who did not respond	15	8	12	10	6	9	4	64

Table 14

Total employment and technical skill composition in each of the firms which responded to the questionnaire

Industries	Order of firms	Total employment	Percentage of technical skills					Total
			Engineering graduates	Diploma holders from the Polytechnics	Of which Diploma holders from GPI Karachi	Matriculates with some practical training & experience	Others	
1 Manufacture of textile	1	4.364	0.02	0.25	0.14	0.12	99.61	100
2 Printing, Publishing and Allied Industries	1	1.500	0.07	0.33	0.13	0.40	99.20	100
3 Manufacture of Chemical and Chemical Products	1	831	1)	1.08	0.48	1.80		100
4 " "	2	110	6.36	1.82	0.91	2.73	89.09	100
5 Manufacture of Products of Petroleum and Coal	1	252	10.71	5.56	4.37	21.43	62.30	100
6 Manufacture of Cement	1	400	1.75	1.75	1.50	0.00	96.50	100
7 " "	2	810	0.37	0.37	0.25	1.48	97.08	100
8 Manufacture of Metal Products, except Machinery and Transport Equipment	1	494	0.00	0.40	0.40	0.00	99.60	100
9 Electrical Machinery, Apparatus, Appliances and Supplies	1	6.000	0.33	1.17	0.83	33.33	65.17	100
10 " "	2	200	2.00	4.50	3.00	1.00	92.50	100
11 " "	3	115	4.35	6.09	4.35	13.04	75.52	100
12 " "	4	60	1.66	21.67	5.00	16.67	60.00	100
13 Manufacture of Transport Equipment	1	5.050	1.29	1.58	1.45	2.18	94.95	100
14 " "	2	460	0.00	2.39	2.39	0.00	97.61	100
15 " "	3	180	0.56	6.66	5.00	0.00	92.78	100
16 " "	4	160	1.88	2.50	2.50	0.00	95.62	100
17 " "	5	80	0.00	10.00	7.50	2.50	87.50	100

1) Confidential

Over

Table 14 Contd.

Industries	Order of firms	Total employment	Engine-ering grad-uates	Percentage of technical skills				Total
				Diploma holders from the Polytec-hnic	Of which diploma holders from GPI Karachi	Matri- culates with some practical train- ing & exper- ience	Others	
18 Electricity & Gas	1	4.500	1.47	not giv- en	0.64	0.2	-	100
19 Transportation, Storage and Com- munication	1	3.155	0.10	4.66	3.77	11.19	84.05	100
20 " "	2	650	0.62	4.15	3.84	30.77	64.46	100
21 Construction	1	35	2.86	2.86	2.86	28.57	65.71	100
22 Services	1	3.000	0.90	2.43	1.00	2.13	94.54	100
23 "	2	49	0.00	12.24	4.08	8.16	78.60	100
24 "	3	9	0.00	11.11	11.11	0.00	88.89	100
25 "	4	not giv- en	-	-	-	-	-	-
26 Wholesale and retail trade	1	800	1.50	1.75	1.00	0.00	96.75	100
27 "	2	230	3.04	4.35	3.91	4.78	87.83	100
28 "	3	50	10.00	20.00	20.00	0.00	70.00	100
29 "	4	15	0.00	13.33	6.66	13.33	73.34	100
30 "	5	13	0.00	7.69	7.69	15.38	76.93	100
31 "	6	3	33.33	33.33	33.33	0.00	33.34	100

Table 15

Average salary earned by diploma holder from Government Polytechnic Institute, Karachi employed in Public and Private organisations in Pakistan by year of graduation and technology

(Those who work abroad, those who kept their income confidential, those having own business and who are students are excluded)

	Year of graduation																	
	1958		1959		1960		1961		1962		1963		1964		1965		1966	
	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.	No. Empld.	Av. Saly.
<u>Automobile:</u>																		
Private	-	-	-	-	3	715	-	-	2	485	4	501	10	448	4	330	2	275
Public (Government & Semi-Government)	-	-	2	577	3	333	-	-	2	345	5	379	6	386	8	364	2	275
<u>Civil:</u>																		
Private	-	-	-	-	-	-	-	-	2	525	3	600	6	492	6	350	4	500
Public (Government & Semi-Government)	-	-	-	-	-	-	-	-	3	579	4	456	9	323	15	230	9	236
<u>Electrical:</u>																		
Private	4	1050	-	-	2	865	5	641	2	900	2	431	6	811	11	375	3	466
Public (Government & Semi-Government)	3	547	2	675	1	370	2	437	1	315	3	400	13	378	8	298	4	400

Over

Table 15 Contd.

	Year of graduation																	
	1958		1959		1960		1961		1962		1963		1964		1965		1966	
	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Saly	No. Empld	Av. Salary
<u>Mechanical:</u>																		
Private	3	866	3	700	8	575	2	510	6	516	7	620	7	453	7	388	5	391
Public (Government & Semi-Government)	-	-	2	558	1	340	5	480	6	410	8	410	5	354	11	340	4	320
<u>Radio & Electronics:</u>																		
Private	4	762	0	-	2	950	0	-	3	450	2	375	3	449	10	339	3	350
Public (Government & Semi-Government)	2	450	2	508	1	700	3	350	6	387	13	369	14	355	2	360	2	291
<u>Power:</u>																		
Private	-	-	-	-	-	-	2	555	2	350	7	556	7	578	8	369	3	350
Public (Government & Semi-Government)	-	-	-	-	-	-	1	342	5	529	6	323	19	398	15	365	2	250
<u>Textile:</u>																		
Private	-	-	-	-	-	-	-	-	-	-	-	-	-	-	10	285	3	300
Public (Government & Semi-Government)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1	320	0	-

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