Public Policy and Administration Research
ISSN 2224-5731(Paper) ISSN 2225-0972(Online)
Vol.2, No.3, 2012

The Public Sector Efficiency in the Education Department

Roohi Ahmed
Department of Economics , University of Karachi, Pakistan
roohiazeem@yahoo.com

Abstract
Developing countries of the world are facing the problem of increased pressures on public balances due to high population growth rates, increasing poverty, unemployment, and rising debt (both domestic and foreign). In this era of globalization, it has become essential that public funds should be used efficiently. This study investigates the public sector's efficiency in the educational expenditure in the two major provinces of Pakistan. For this purpose we have used the data of Punjab and Sindh at district level. To evaluate the performance of each of the districts of these provinces, we have adopted the technique of Data Envelopment Analysis (DEA). The efficiency scores and rankings for districts in each of the provinces have been computed and analyzed. Education sector has been regarded as the priority social sector by almost all countries of the world; hence the findings of this study bring to light hidden facts regarding the public sector efficiency in a developing country like Pakistan where governments are forced to keep public expenditure at minimum.
Keyword: Education, public expenditure & efficiency.

1. Introduction

Over the past decades developing countries have been facing strict conditionality's from the international landing organizations like World Bank (WB) and International Monetary Fund (IMF) to shrink the budget deficits by curtailing the expenditures. Macroeconomic constraints also force the governments of these poor countries to limit their expenditure at minimum. In this situation the importance of efficiency of the public sector in resource utilization for economic growth and for human welfare has gained attention. The pressure from the public as well as rest of the world is continuously increasing on the government official of particularly low-income countries for transparency and for efficient resource utilization.

The concept of measuring efficiency was studied by Farrell in 1957. He emphasized the importance of increasing output with the given amount of inputs by using factors of production more efficiently (in case of industry). The performance of the government has been studied by number of researchers using the estimation of efficiency frontiers in different areas. These include Fakin and Crombrugghe (1997) and Afonso, Schuknecht and Tanzi (2003). SimilarlyClements (2002), St.Aubyn (2002, 2003) and Gupta, et.al. (2001) have also analyzed the efficiency of the expenditure in education and health sectors. All the above-mentioned researchers have used the Free Disposable Hull model in their research. The efficiency of health expenditures in 191 countries has been studied by Evans, Tandon, Murray and Lauer (2002). Ulrike Mandl, et.al (2008) has explained the concept of efficiency and effectiveness in the context of relationships between inputs, outputs and outcomes (Figure 1). Here public sector is a producer, who uses factors of productions (inputs) to produce goods and services (output). And the input-output ratio reflects the efficiency[i] in production. Hence this implies that production possibility frontier[ii] can be employed to explain the production of public goods like education, health, transportation and other social services. However, most of outputs produced by the public sector are not sold in the market like other goods, due to which their market value cannot be assessed. This makes the assessment of productivity of public spending a difficult task.

Moreover, Ulrike Mandl, et.al (2008) identifies the difference between the private and public process of production by introducing the concepts of effectiveness and outcomes. The "outcome" is simply the attainment of the required level of welfare or growth, which are controlled by the policy makers. And "effectiveness" is closely linked with the political choice. Hence, the measurement of effectiveness is very complicated in case of developing countries. In case of education sector, the spending of the public sector serve as the input and outputs are repeatedly measured by performance or enrolment rates of students at various level of education. The outcome, however, may perhaps be the increase in the overall literacy rate or increase in the educational qualifications of the labor force. For example to teach students, teachers, books and infrastructure (like table, chairs, blackboard and classroom) is required as inputs. When optimal combination of these inputs is used the output (attainment rate) will be maximized. Hence, the dimension of

allocative efficiency involves detailed examination of the issue. Moreover complete knowledge concerning the expenditure on education, priorities, plans and policies of particular country under investigation are also needed. When improvement in technical efficiency is achieved it cannot ensure the efficient execution of responsibilities by the public sector.

The core contribution of this research is to tackle the subject of measurement and analysis of public sector efficiency in the education sector in both the two major provinces of Pakistan (Punjab and Sind). In this era of globalization, it has become extremely important that governments of the developing countries should become very vigilant in the allocation of funds to the education sectors in their respective countries. Moreover these public funds are required to be spending efficiently and leakages must be avoided effectively. Here Data Envelopment Analysis has been applied to calculate efficiency of the districts. To the best of my understanding this kind of analysis has not been done earlier at the district level for Pakistan.
The paper is structured as follows. In the consequent section, a brief review of education sector in Pakistan is discussed. Section 3 deals with source of data and methodology followed by the result, conclusion and some policy implications in section in sections 4 and 5.

1.1 Education in Pakistan

Education plays vital function in the growth and development of any country. It has multidimensional impact on the human capital development as well as on the whole society. The broad range of its benefits extends from economic, social to political spheres. Human capital is undoubtedly remains the major factor of production of successful economies. Extensive literature exists in support of human resource development being the one of the major determinant of development. The key role of education is to improve total factor productivity of human capital, by developing skills and technical know-how leading towards poverty reduction and economic growth.

Evidence shows that illiteracy remains a major obstacle to economic development particularly in developing countries. Pakistan's educational level as compared to the other developing countries of South Asia is presented in table 1. According to the HDR (2006) Pakistan's adult's literacy rate in 2004 is 49.9 percent which is much lower than that of South Asia which is almost 60 percent and even less than low human development countries (57.9 Percent).

The combine enrolment ratio of Pakistan is 36 percent, which is again far bellow Maldives' enrolment ratio of 79 percent and even India's ratio was 56 percent in the year 2001. Public expenditure on education as a percent of the GDP in Pakistan has been declined from 2.6 percent in 1991 to 2.0 percent in 2004. This may cause a decline in overall literacy ratio in 2004. However, Country like Maldives has shown 8.1 percent of the GDP on the education sector that archived an impressive literacy rate of 96.3 Percent in 2004. The expenditure on education sector in Pakistan shows a low priority compare to other neighboring countries. Hence, Pakistan's Educational performance is quite unsatisfactory as compared to the other countries in the region. During the last six years these expenditures have been fluctuating within a very low range of 1.79 percent to 2.42 Percent of GDP as shown in Table 2.

The figure 2 shows the remarkable improvement in Total Enrolment in education institutions at primary, middle and tertiary level in Pakistan. At primary stage all the students who are enrolled in class I till class IV are included. Similarly enrolment at middle stage represents all students from class VI to VIII. It is evident from the graph that wide gap exists between the enrolment at primary level and middle. However, the enrolments at middle and high stage have remained very low during the period 1993 till date. The studies suggest that sky-scraping enrolment is required at primary and secondary stage to ensure the long run growth of the higher education.

The Table 3 compares the primary level Gross Enrolment Ratio[iii] (GER) among the four provinces and overall situation in Pakistan. The GER at the primary level in 2004-05 was 86 Percent compare to 72 Percent in 2001. Even low, but steady increase in overall GER in Pakistan is observed. Provincially all the four provinces have been performing well since 1993. Punjab has highest gross enrolment ratio at primary level and the literacy rate for the last fifteen year as compared to the other provinces. In 1999 GER, at primary level of Punjab was 75 Percent, which has increased to 95 Percent in 2005. Sindh GER also has shown remarkable improvement from 64 Percent in 1999 to 75 Percent in 2005.

Province-wise GER at middle level is presented in Table-4. At the middle level GER has remained around 50 percent in all provinces accept for the Balochistan province. However, the provinces of Punjab and Sindh have shown perceptible increase in 2004-2005. The year 2005 shows Punjab at the top (55 Percent) followed by Sindh (52 Percent), NWFP (53 Percent) and Balochistan (39 percent). Moreover, Punjab and Sindh have the highest proportion of population that has ever attended school.

From the tabular data it is unambiguous that education system in Pakistan is not in a sound position. Public spending on education stay behind 2 percent of the GNP prior to 1984-85. During recent years it has improved to 2.2 percent. Moreover, numbers of studies of the education sector in Pakistan have revealed that quality of education that is being provided by the public educational institutions at various levels is incredibly underprivileged. Many schools have furniture in very poor condition with inadequate teaching staff. However the issue of efficient distribution of funds in education sector is of prime importance. As education plays vital role in the growth and development of any country. It has multidimensional impact on the human capital development as well as on the whole society. Therefore, main contribution of this study is to deal with the subject of measurement and analysis of public sector efficiency in the education sector of Pakistan. The focal point of this investigation is how to enhance the value of public expenditures without increasing the total educational budget in developing countries like Pakistan.

1.1.1 Data and Methodology

In the literature researchers have identified three major types of efficiency i.e. (i) technical or productive efficiency (ii) allocative efficiency and (iii) dynamic efficiency. Technical or productive is one in which For the assessment the efficiency of each of the districts of Punjab & Sindh in the educational sector we have adopted the methodology of the Data Envelopment Analysis (DEA). According to the Wikipedia "data envelopment analysis (DEA) is a nonparametric method in operations research and economics for the estimation of production frontiers. It is used to empirically measure productive efficiency of decision making units (or DMUs)". In DEA, the firm under study is known as a "Decision Making Unit (DMU)". This DMU transforms inputs into outputs. The DEA model simply estimates the efficiency scores of these DMUs and outlines the possible sources of efficiency.

Maximum possible level of output is produced using the given amount of the input. In other words output is produced at the minimum expenditure. However, allocative efficiency is determined by the selection of that combination of different outputs which is technically efficient. If both the technical efficiency and allocative efficiency exist then total economic efficiency exists. The 3rd type efficiency is dynamic efficiency which simply represents the efficient use of factors of production overtime.

The efficiencies of the economic units are generally estimated by the deterministic frontier approach (DFA), stochastic frontier approach (SFA) and data envelopment analysis (DEA). Both the SFA and DFA measures absolute economic efficiencies. To determine the economic efficiency of any unit/firm, if its performance is compare to the idealized bench mark of economic efficiency it is known as DFA. However, If the unit is away from the efficiency frontier due to external factors beyond its control then in this situation SFA is used, because SFA consider all such external factors while estimating the efficiency of the concern unit. DEA measures the economic efficiency of the unit as compared to the other unit when all units are involved in the production of similar output or providing similar service to the economy.

The estimation of efficiency started with Farrel (1957). He explained the measurement of firm's efficiency on the basis of the research done by of Debreu (1951) and Koopmans (1951). His research was further extended by Charnes, Cooper and Rhodes (1978) and Banker, Charnes, Cooper (1984). In literature, numbers of empirical studies have employed DEA approach to measure the efficiency of the public sector producing goods and services. These include Ganley and Cubbin (1992), Mensah and Li (1993), Vanden et.al (1993). It is assumed that public sector can control only the inputs therefore input orientation of the model is being adopted here as done by Ganley and Cubbin (1992).

In this paper, there are 34 DMU's reflecting the 34 districts of the province of Punjab and 15 DMU's for the 15 districts of the province of Sindh. In this paper, the total number of enrolments (including primary, middle & higher) in each district of Punjab and Sindh is taken as output. The total government expenditures on the education sector (including primary, middle & higher) are used as inputs and it is hypothesized to impact upon the output of total enrolment at all

levels of education. The efficiency of each district is calculated by its capacity to convert the suitable input (education expenditures) into the corresponding output of higher school enrolment. For this purpose an efficient production frontier for the output (school enrolment) will be constructed formed by the "best practice" district.

To apply the DEA, numerous assumptions related to the association of the input and output need to be addressed. For example, the DEA models are of two type's output oriented models and input oriented models. In the output oriented models, the efficiency of an economic unit is calculated in terms of the output produced with a given level of inputs and its capability to raise output up to those of the bench mark. This is in contrast to the other models; here the economic unit's efficiency is calculated by keeping the total output constant at various levels of the inputs. Moreover in any process of production identification of the level of technology involved is very important. If the fundamental structure is characterized by a constant returns to scale (CRS) technology, both orientations will give the identical efficiency level. In case of variable returns to scale (VRS) diverse results for efficiency can be obtained.

This study investigates the public sector's efficiency in the educational expenditure in the two major provinces of Pakistan. For this purpose we have used the data of Punjab and Sindh at district level. To evaluate the performance of each of the districts of these provinces, we have adopted the technique of Data Envelopment Analysis (DEA). The efficiency scores and rankings for districts in each of the provinces have been computed using the CCR model and BCC model develop by Charnes, et.al (1978) and Banker et.al (1984). Suppose there are "n" districts which are producing S different outputs and are using T inputs. Then the relative efficiency of each district can be written as under:

$$\max_{v\,y} \quad (v\,y_i / w\,x_i)$$

$$\text{s.t.} \quad v\,y_j / w\,x_j \leq 1 \qquad \text{(i)}$$

$$v, w \geq 0$$

here y_i represents vector of output which is being formed by the *i*th district, x_i stands for the inputs vector used by the *i*th district, v is S x 1 vector of output weights, w is a T x 1 vector of input weights, i and j equals 1,2,……..n. The initial condition implies the value of efficiency ratio of the district is less than 1. The later condition implies that all weights of inputs and outputs are positive. These weights v & w are calculated such that each district maximizes efficiency ratio. This fractional liner program (i) also can be written as the equivalent linear programming problem:

$$\max_{v'\,y} (v'\,y_i)$$

$$\text{s.t.} \quad w\,x_j = 1 \qquad \text{(ii)}$$

$$v'\,y_j - w'\,x_j \leq 1$$

$$v', w' \leq 0$$

Where v' & w' represents the transformation.

1.1.2 Result

This study investigates the public sector's efficiency in educational expenditure in the two major provinces of Punjab and Sindh in Pakistan. For this purpose we have used the data available of Punjab for the year 2003-04 and for Sindh 2001-02. The results are presented in appendix 'A' for both the BCC-I and CCR-I models. The CCR-I results for the

province of Punjab show that overall only three districts are most efficient in terms of achieving highest enrolment at all levels. They are Gugrat, layyah and Mandibahaudin. Faisalabad is the most efficient district as opposed to Lahore, which is the most inefficient. Over all seven districts out of 34 performed worst in ranking including Mianwali, Rahimyarkhan, Bhawalpur, Rawalpindi, Bahawalnager, Lahore and Hafizabad.

The BBC-I score evaluate efficiency assuming variable returns to scale. Here, 06 more districts; Faisalabad, Lodhran, Muzaffargarh, Pakpatan, Rahimyar Khan and Sargodha moved to the efficient position adding together with the other three CCR efficient districts which maintain their earlier position. Hafizabad, Lodhran and Pakpatan's full efficiency is caused by the nominal amount of inputs yet it is rated lowly in the CCR score. However, Bahawalnager is considered equally inefficient by both models as ranked 32 in both cases.

The CCR-I results for the province of Sindh show that overall Sanghar followed by Karachi and Sakkhur in ranking are most efficient districts. Sanghar is the most efficient as opposed to Karachi. Over all Thatta, Larkana, Jacobabad & Dadu performed worst in ranking. The BBC-I results for this province show that Karachi, Kharpur, Sanghar and Sakkur are the efficient districts. Hence, Khairpur in being added in the list of efficient district. However, Thatta, Mirpur khas, Jacobabad and Dadu are considered inefficient in accordance to the ranks given by the BCC-I model. It is observe that in the case of Sindh Province four districts are highly inefficient and are ranked equally in both models. These are Nawabshah (10), Thatta (12), Jacobabad (14) and Dadu (15). Hence it can be concluded that constant returns to scale exist in the education sector in the Province of Sindh where as Punjab's education sector is being characterized by increasing return to scale.

1.1.3 Conclusion

Pakistan is facing the problem of increased pressures on public balances due to high population growth rates, increasing poverty and unemployment, rising debt (both domestic and foreign). In this era of globalization, it has become extremely important that governments of the developing countries should become very vigilant in the allocation of funds to the education sectors in their respective countries. Moreover these public funds are required to be spending efficiently and leakages must be avoided effectively. The spending of the public sector of the developing countries depends mainly on the tax revenues and borrowing from the different foreign and domestic financial intermediaries. These taxes as well as borrowings have rigorous implications on the entire economy. Taxes generate contortions in the distribution of income. Whereas the domestic borrowings exert unnecessary pressures on the inflation rate and foreign borrowing increase debt burdens. This not only hampers economic growth but also slow down the process of economic development. From the available data it is evident that government of Pakistan is unable to allocate the obligatory budget to the education sector as necessary for the growing population.

Hence it is essential that public resources should be spending in a way, which not only ensures the overall development of the country, but reduce income inequalities and poverty. Serious efforts should be made to reduce corruption and implement regulations ensuring accountability of the officials. Thus improving efficiency of the public spending pressures on the budget deficit can be reduced.

References

Afonso, A., Schuknecht, L. and Tanzi, V (2003), "Public sector efficiency: an international comparison", *ECB working* paper 242.

Afriat, S.N (1972), "Efficiency estimation of production functions", *International Economic Review*, vol. 13, pp. 568-598.

Banker, R.D., Charnes, A. and Cooper, W.W. (1984), "Some Models for Estimating Technical and Scale Inefficiencies in Data Envelopment Analysis", *Management Science*, 30, 1087-1092.

Boles, J.N. (1966), "Efficiency Squared – Efficient Computation of Efficiency Indexes", *Proceedings of 39th Annual Meeting of the Western Farm Economic Association*, pp 137-142.

Charnes A, Cooper WW and Rhodes E (1978), "Measuring the efficiency of Decision Making Units". *European Journal of Operational Research* 2: 429-444.

Clements, B. (2002), "How efficient is Education Spending in Europe"? *European Review of Economics and Finance*, 1 (1), 3-26.

Debreu D, (1951)"The coefficient of resource utilization", *Econometrica* 19, 3-292.

Evans, D., Tandon, A.; Murray, C. and Lauer, L. (2000, "The Comparative Efficiency of National Health Systems in Producing Health: an Analysis of 191 Countries". *GPE Discussion Paper Series 29, World Health Organization, Geneva.*

Fakin, B. and Crombrugghe, A. (1997), "Fiscal Adjustment in Transition Economies: Social Transfers and the Efficiency of Public Spending, a Comparison with OECD Countries". *Policy Research Working Paper 1803, the World Bank Washington.*

Farrell, M.J. (1957), "The Measurement of Productive Efficiency", *Journal of the Royal Statistical Society*, A CXX, Part 3, 253-290.

Ganley, J. and Cubbin (1992), "Public Sector Efficiency Measurement", *North-Holland.* Text book

Gupta, S. and Verhoeven, M. (2001), "The Efficiency of Government Expenditure – Experiences from Africa". *Journal of Policy Modeling*, 23, 433-467.

H.O. Fried, et.al, "The measurement of productive efficiency:Techniques and applications "(pp. 300-334). *New York: Oxford University Press*

Mandl, L. Adriaan, D., Fabienne, I. (2008), "The Effectiveness and Efficiency of Public Spending". *European Commission, Economic and Financial Affairs, Directorate-General.* Downloaded from the website http://ec.europa.eu/economy_finance/publications

Mensah, Y.M., & Li, S.H., (1993), "Measuring production efficiency in a not-for-profit setting: An extension". *The Accounting Review*, *68*(1), 66-88.

Norman M., and Stoker B., (1991), "Data Envelopment Analysis: The Assessment of Performance". *Wiley: Chichester.*

Pakistan Economic Survey (2006-07), *Government of Pakistan, Finance Division, Economic Advisor's Wing, Islamabad.*

Social Development in Pakistan Annual Review (2003), *Social Policy and Development Center*

St. Aubyn, M. (2002), "Evaluating Efficiency in the Portuguese Health and Education Sectors". *Paper presented to the conference*. Economica.

Mandl, L. Adriaan, D., Fabienne, I. (2008), "The Effectiveness and Efficiency of Public Spending". *European Commission, Economic and Financial Affairs, Directorate-General*. Downloaded from the website http://ec.europa.eu/economy_finance/publications

Table-1
Comparison of Human Development Index and Public Expenditure on Education

Country	**HDI**	**Adult Literacy Rate**			**Net Primary Enrolment Ratio**		**Combine Enrolment Rate**	**Public Exp. on Education as percentage of GDP 98-2000**		
		1990	2001	2004	1991	2004	2001	1991	2002	04
Sri Lanka	93	88.7	92	90.7		97	63	3.2	3.1	.
Iran	96	63.2	77	77	92	89	64	4.1	4.4	4.8
Maldives	98	94.8		96.3		94	79	7.0	3.9	8.1
India	126	49.3	58	61.0		90	56	3.7	4.1	3.3
Pakistan	134	35.4	44	49.9	33	66	36	2.6	1.8	2.0
Bhutan	135	..	47	..		..	33	.	5.2	.
Bangladesh	137	34.2	41	..		94	54	1.5	2.5	2.2
Nepal	138	30.4	43	48.6	46.6	70.1	64	2.0	3.7	3.4
South Asia		49.1		60.9						
Low Human Development		48.1		57.9						
Medium Human Development		71.2		80.5						

Source: UNDP, Human Development Report (2003, 2006)

Table – 2

Public Sector Expenditure on Education

Year	Public sector Expenditure on Education (in Billions. Rs)	Expenditure on Education as percentage of GDP	Expenditure on Education as percentage of total expenditure
2000-01	75.9	1.82	10.6
2001-02	78.9	1.79	9.5
2002-03	89.8	1.86	10
2003-04	124.2	2.2	13
2004-05	140	2.15	12.5
2005-06	170.8	2.24	12.2
2006-07	216.5	2.5	12
2007-08	253.7	2.47	9.8
2008-09	275.5	2.1	11.52

Source: Pakistan Economic Survey 2008-09

Table-3

Gross Primary Enrolment Rate (Percentage)

	Pakistan	Punjab	Sind	NWFP	Balochistan
1998-99	71	75	64	70	64
2001-02	72	76	63	77	62
2004-05	86	95	75	80	67

Source: PSLM Survey

Table-4

Gross Middle Enrolment Rate (Percentage)

	Pakistan	Punjab	Sind	NWFP	Balochistan
1998-99	46	48	46	42	38
2001-02	47	51	41	44	42
2004-05	53	55	52	53	39

Source: PSLM Survey

Figure 1

The concept of efficiency and effectiveness

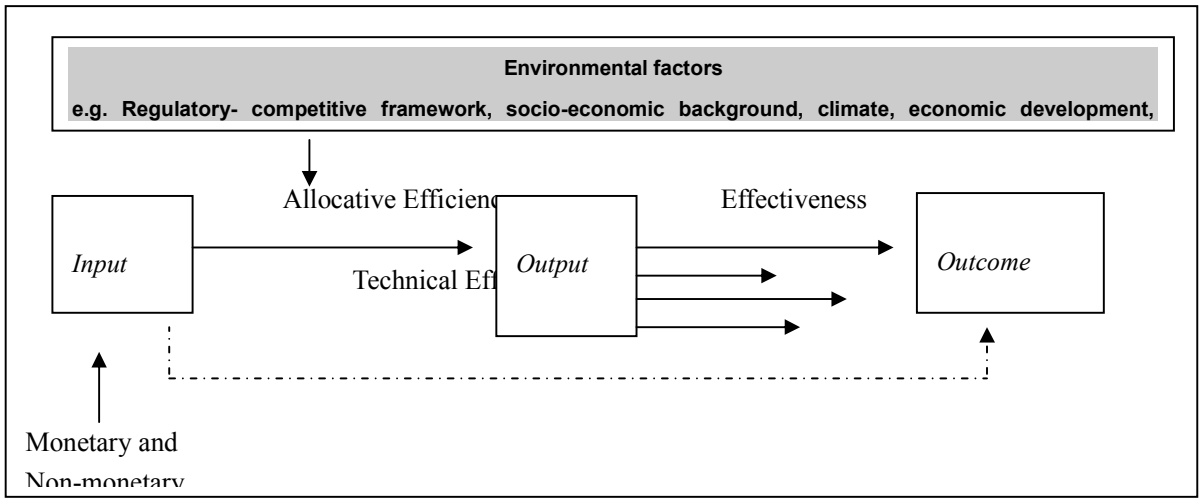
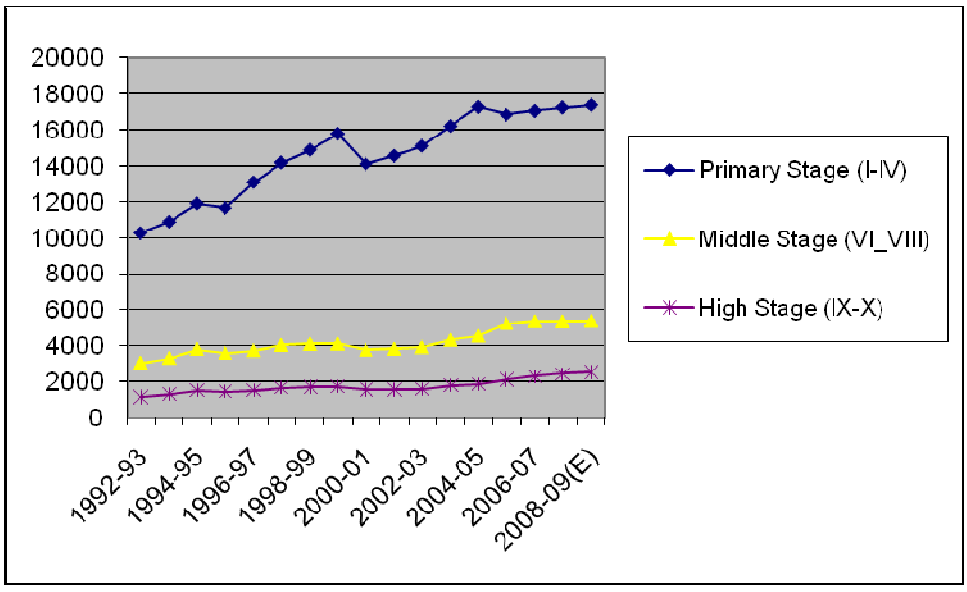


Figure 1: Conceptual framework of efficiency and effectiveness

Source Ulrike Mandl, et.al (2008)

Figure 2

Enrolment in Education Institutions



Note: All figures are in 000 no.

APPENDIX 'A'

Results for the Province of Punjab

Model Name=BCC-1

DMU	Score	Rank
Faisalabad	1	1
Gujrat	1	1
Layyah	1	1
Lodhran	1	1
Mandi Bahauddin	1	1
Muzaffargarh	1	1
Pakpattan Sharif	1	1
Rahim Yar Khan	1	1
Sargodha	1	1
Khushab	0.999192	10
Sialkot	0.988712	11
Sheikhupura	0.964916	12
Jhang	0.955332	13
Jehlum	0.940822	14
Gujranwala	0.920807	15
Attock	0.918283	16
Khanewal	0.89094	17
Dera Ghazi Khan	0.889705	18
Narowal	0.885262	19
Bhakkar	0.879352	20
Kasur	0.871051	21
Rajanpur	0.869374	22
Okara	0.866846	23
TobaTek Singh	0.843657	24
Sahiwal	0.836058	25
Chakwal	0.828627	26
Vehari	0.815782	27
Multan	0.809322	28
Bahawalpur	0.75779	29
Mianwali	0.751948	30
Hafizabad	0.744675	31
Bahawalnagar	0.691758	32
Rawalpindi	0.679923	33
Lahore	0.633975	34

Results for the Province of Sindh

Model Name=BCC-1

DMU	Score	Rank
Karachi	1	1
Khairpur	1	1
Sanghar	1	1
Sukkur	1	1
Hyderabad	0.941816	5
Ghotki	0.865367	6
Shikarpur	0.808223	7
Larkana	0.728932	8
Badin	0.7097	9
Nawabsha	0.67316	10
Naushero F	0.646077	11
Thatta	0.62861	12
Mirpurkhas	0.49118	13
Jacobabad	0.453253	14
Dadu	0.394696	15

APPENDIX 'B'

Results for the Province of Punjab

Model Name = CCR-I

DMU	Score	Rank
Gujrat	1	1
Layyah	1	1
Mandi Bahauddin	1	1
Muzaffargarh	0.936404	4
Pakpattan Sharif	0.917185	5
Attock	0.909161	6
Sargodha	0.87266	7
Khanewal	0.863492	8
Jehlum	0.860415	9
Okara	0.854864	10
Sialkot	0.853956	11
Gujranwala	0.852284	12
Sheikhupura	0.847649	13
Dera Ghazi Khan	0.845933	14
Sahiwal	0.830469	15
Faisalabad	0.826269	16
Bhakkar	0.823615	17
0TobaTek Singh	0.819545	18
Khushab	0.819164	19
Kasur	0.812996	20
Chakwal	0.806469	21
Narowal	0.805472	22
Rajanpur	0.784739	23
Multan	0.772709	24
Lodhran	0.765805	25
Jhang	0.76265	26
Vehari	0.736306	27
Mianwali	0.713971	28
Rahim Yar Khan	0.697747	29
Bahawalpur	0.689854	30
Rawalpindi	0.640163	31
Bahawalnagar	0.625093	32
Lahore	0.558436	33
Hafizabad	0.486662	34

Results for the Province of Sindh

Model Name = CCR-I

DMU	Score	Rank
Sanghar	1	1
Karachi	0.895458	2
Sukkur	0.685665	3
Naushero F	0.637764	4
Ghotki	0.553301	5
Khairpur	0.538911	6
Hyderabad	0.49481	7
Shikarpur	0.490434	8
Mirpurkhas	0.489994	9
Nawabsha	0.479183	10
Badin	0.46262	11
Thatta	0.455797	12
Larkana	0.442803	13
Jacobabad	0.398991	14
Dadu	0.332244	15