

Performance Evaluation of Schools Division in Mindanao: Education for All 2015

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Abstract - The study was conducted to evaluate the technical and productivity performance of school divisions in Mindanao from the period of 2002- 2010. The mean profile of input and output variables was computed using Mean the Technical and Allocative Efficiency scores and Total Factor Productivity were calculated using DEA with output orientation while the sources of inefficiency of the schools divisions were calculated using the Tobit Regression and the significance of the difference were calculated using SPSS version 16. Based on the findings among 48 school divisions in Mindanao 10 of these have achieved full technical efficiency level. Meanwhile, 38 schools division were least efficient due to lack of factors inputs like number of male and female enrollees, desk, classrooms and MOOE. A component of the productivity change is due more technological and total factor productivity changes with efficiency changes providing a gap. At 5 percent level of significance, there were significant differences

in the technical efficiency and allocative efficiency scores of the school division when grouped according to regions where they belong. Thus, the study revealed that number of the desk and teachers were the sources of inefficiencies of the school divisions.

Keywords - Technical Efficiency, Allocative Efficiency, Productivity, Index, Performance Evaluation, Mindanao, Philippines

INTRODUCTION

One of the fundamental human rights of every citizen is getting access to education. This right has been denied particularly below the poverty line in many developing countries of the world.

According to Caoile (2007) and Maligalig (2008), education is a major part of national development policy. The trends in basic education statistics suggested that the country faces challenges in meeting the Education for All targets and Millennium Development Goals (MDGs) for basic education.

In achieving the goal of universal access to education, there are still many challenges that must be met in fully realizing the Millennium Development Goals (MDG) 2 targets. Some of the major challenges facing in particular the basic education are mentioned below.

The Philippines is currently running one of the largest primary education sectors in the world, but the organizational capacity to run such a huge primary education system has indeed been a big challenge for any such country in the world. Insufficient instructional time, inadequate number of classrooms, desk and teaching staff, low teacher effectiveness, lack of sufficient teaching – learning materials, and lack of adequately trained manpower to manage such a large education system may be identified as some of the major constraints facing the country's primary education system (DPE, 2006).

Eradicating high incidence of poverty has been one of the biggest challenges on the way of achieving the MDG 2 targets. Low incentives for attending schools vis-a-vis acute poverty in the families keep children away from the schools as they have to engage in earning for their living. This contributes to low attendance rate and high drop-out rate. Moreover, the socio-economic condition in many of these school

communities is quite low. Usually, this affects the support of parents to the learning of the school age children as well as to the whole school which generally contributes to absenteeism, dropping out, truancy, illnesses, and inattentiveness in class.

Thus, linkages between infrastructure and education have already been established. Improved roads and transportation have major implications for enrolment ratios – especially for girls (particularly living in the rural areas) enrolment and attendance rate. Many of the government schools are too far away or too crowded discouraging the parents sending their children to school. It is especially true in the case of girl students and in the rural areas.

Along with “Education for All”, the Philippines is also committed to pursuing eight time-bound and specific targets under the Millennium Declaration which it signed on September 2000. The Declaration, in general, aims to reduce poverty by half in 2015 (22.65 percent proportion of the population below poverty incidence and 12.15 percent below subsistence incidence by 2015). With the adoption of the Declaration, the Philippines likewise affirmed its commitment to the Millennium Development Goals (MDG) geared towards reducing poverty, hunger, diseases, illiteracy, environmental degradation and discrimination against women. This goal have been mainstreamed in the country’s Medium Term Philippine Development Plan (MTPDP) 2004-2010 including policies and plans related to children, access to primary education and gender equality. Specifically, Part IV of the MTPDP focused on “Education and Youth Opportunity.”

However, despite the legal mechanisms, budget prioritization and increased access, Philippine education has been dogged with issues. Among the issues that needs to be resolved but have improved lately include the high dropout rates, high number of repeaters, low passing grades, lack of a particular language skills, failure to adequately respond and address the needs of people with special needs, overcrowded classrooms and poor teacher performances. These problems in turn resulted to a considerable number of illiterate Filipinos, out of school youths and graduates who are not prepared for work.

Basic Education spending remains the top priority of the government with the Department of Education receiving the biggest share of budget among government agencies. In spite of this, the budget level

remains insufficient to address resource shortages and respond to the growing number of school-age children. Despite of this, intensified efforts of the Department of Education to provide sufficient education resources and enhance the learning environment through the provision of more classrooms and the creation of more teacher items, shortages in classrooms and teachers still persist in many areas. This is mainly due to continuous increase in student enrolment and poor system of allocating resource, resulting in inequalities among public schools. In view of this, therefore, private sector assistance and support is being sought to address the perennial problem of insufficient basic education facilities such as classroom and chairs.

To further strengthen the performance of Department of Education particularly in Mindanao, thus this study would evaluate the efficiency levels of the schools division in the achieving primary education or Education for All. Such study will be analyze whether these school division use maximum utilization of the resources, whether they meet their targets, and to suggest ways on how to improve their performance.

OBJECTIVES OF THE STUDY

This study aims to evaluate the Performance of School Divisions in Mindanao: Education for All in 2015. Thus, this study attempts to determine the efficiency and productivity growth of school divisions in the implementation of Basic Education in the context of MDGs 2015 in Mindanao Regions.

MATERIALS AND METHODS

This study used quantitative methods of estimating the efficiency scores and sources of inefficiencies of schools divisions in six regions in Mindanao. Data Envelopment Analysis (DEA), a nonparametric approach was used in calculating the efficiency scores. In calculating technical efficiency scores, constant return to scale (CRS) under the assumption of an output oriented model was used while for allocative efficiency scores(CRS) under the assumption of an input oriented model was used.

DEA uses data observations to evaluate directly the relative

performance of a set of decision making units, in a multi input–multi output context. At first, it was mainly developed to evaluate the relative efficiency of firms by transforming multiple inputs into multiple outputs, making minimal prior assumptions about the shape of the production possibility set, but inferring information from the data set. The conventional definition of efficiency can be traced through Farrell (1957), the first publication that made the DEA methodology popular and introduced it into the operation research world was Charnes *et al.* (1978). Subsequently, DEA has been applied to evaluate the relative performance of medical services, as in Nyman and Bricker (1989), or of educational institutions, as in Charnes *et al.* (1981). It has also been applied in the private sector, as in the valuation of banks, in Charnes *et al.* (1990). A thorough review of the theory and applications related to DEA can be found in Coelli *et al.* (1998), while an extensive bibliography is reported in the survey articles by Seiford (1996) and Taveres (2002).

The method used in the study is the model known DEA, developed by Charnes *et al.* (1978) and Banker *et al.* (1989). DEA is a method used for the measurement of efficiency in cases where multiple input and output factors are observed and when it is not possible to turn these into one aggregate input or output factor. Since 1978, thousands of articles have been published using this analysis technique in various fields.

This method is especially adequate to evaluate the efficiency of non-profit entities that operate outside the market since for them the measure of efficiency such as income and profitability do not work satisfactorily. Two main reasons being that these entities are not focused on obtaining profits, and the main source of finances does not come from the sale of goods and services.

DEA provides a comparative efficiency indicator of the units to be evaluated. The units analyzed are called decision –making units (DMUs). In DEA, the relative efficiency of a DMU is defined as the ratio of the total weighted output to the total weighted input. If the homogeneity is maintained, the outputs and inputs can be expressed in any unit of measurement.

In contrast to the traditional parametric production function, where a specific predefined functional form is assumed to apply to each observation, DEA makes no assumptions about the form of the

production function. The actual inputs and outputs observed are used to estimate a benchmark production frontier. For this reason, the efficiency indicator obtained is relative, since it is elaborated by referring to the rest of the DMUs. DEA allows each DMU to choose the vectors of input and output weights which maximize its own ratio weighted output to weighted input, subject to the constraint that the weight vector chosen by the kth. DMU should not allow any DMU is judge according to standard set by itself. There are available computer programs that carry out the calculation process.

Sources of Data

Secondary data were used in the study in order to compare the efficiency performance of the school division Mindanao over a period of 9 years. The data were obtained from the school profile and performance indicators of the school from the database of Department of Education Regional Offices in all regions of Mindanao. These data were likewise subjected to validation with the same reports gathered from the different reports from the Regional office of the Department of Education.

Data that were gathered primarily pertain to the input variables the Key performance indicators the data covered 9 periods, from Calendar Year 2002-2010.

Research Locale

The subjects of the study are the school divisions in Mindanao Region. The school divisions of Region 9, 10, 11, 12, ARMM, and CARAGA region are under the supervision of the Department of Education Regional Director.

Schools Division of Region 9

The figure 3 below showed the schools divisions in region 9 which is composed of eight Schools divisions namely Dapitan, Dipolog, Isabela, Pagadian, Zamboanga city, Zamboang del Sur, Zamboanga del Norte, and Zamboanga Sibugay.



Figure 3. Map Locations of School Divisions in Region 9
Source: www.google.com

Schools Division in Region 10

Figure 4 below is the map location of school divisions in Region 10. It composes of 9 school divisions namely Bukidnon, Cagayan de Oro, Camiguin, Gingoog, Iligan, Lanao del Norte, Misamis Occidental, Misamis Oriental and Ozamis.



Figure 4. Map Location of school divisions of Region 10
Source: www.google.com

School Division of Region 11

Region 11 is found in Southern Mindanao. It shows in figure 5 the location map of all school divisions in Region 11 namely, Compostella Valley, Davao City, Davao del Sur, Davao del Norte, Davao Oriental, Panabo, Digos City and Tagum.



Figure 5. Location map of school division in Region 11

Source: www.google.com

School Division in Region 12

Figure 6 showed the map location of all school division in Region 12. It composed of eight school divisions namely Cotabato, General Santos, Kidapawan, Koronadal, North Cotabato, Sarangani, South Cotabato and Sultan Kudarat.



Figure 6 Location maps of School Divisions in Region 12

Source: www.google.com

School Division in Caraga Region

Caraga Region as shown in figure 7 below composed of eight school division namely, Agusan del Sur, Agusan del Norte, Bislig, Butuan City, Siargao, Surigao City, Surigao del Sur and Surigao del Norte.



Figure 7. Location maps of School Divisions in Caraga Region

Source: www.google.com

School Divisions in ARMM Region

ARMM Region is composed of seven school Division namely, Basilan, Lanao del Sur I, Lanao del Sur II, Maguindanao, Marawi City, Sulu and Tawi-Tawi.



Figure 8. Location maps of Schools Division in ARMM Region

Source: www.google.com

The first step in conducting this study is to inform the principal wherein the researcher who actually teach for proper protocol. After this, the researcher read some literature review to get all the indicators used in the Department of Education for identification of the variables to be used in the study. Thereafter, a consolidation of these data was done. The purpose of constructing a conceptual model that was comprehensively represented the understanding of efficiency and Productivity growth of the schools Division in Mindanao regions in the implementation of MDG 2015 particularly goal 2 to be access to primary education. Next, the variables were validated by the adviser after which the researcher called the different Regional Offices to ask permission if the researcher can access the data recorded in the databank or database.

At the onset, the researcher met with the different Director of the Department of Education in Region 9, 10, 11, 12, CARAGA and ARMM. The directors scrutinized the rationale as well as the objectives and the significance of the study and the resulting conceptual framework will then be subjected to criticism with the help of several experts in the field in the Department of Education. The researcher made a letter to the respective Chairman of the Division in Research and Development to have access on the data to be used in the study. To get the data on MOOE, the researcher went to Department of Education Manila in the Department of Budget.

Data from 2002 to 2010 on the identified variables were culled, sorted and tabulated. This data were then processed using the software on Data Envelopment Analysis by the technical assistance with the adviser.

Analysis and interpretation of results were processed from outputs of DEA.

Data Analysis

Problems 1 and 2 were analyzed using Descriptive Statistics (Mean, Frequency, and Percentage) with the use of SPSS version 16. Problem 3 was analyzed using the DEA and software to be used DEAP version 2.1 was utilized to calculate the technical and allocative efficiencies of the Schools Division in Mindanao Region. Furthermore, Problem 4 the

productivity growth was likewise calculated using Malmquist total factor productivity index, an extension of DEA. Problem number 4 was analyzing using analysis of variance to determine if there is a significant difference between variables used in the study. To determine whether what factors that would affect the inefficiency of the school divisions among regions, Tobit regression was used through Eviews version 3.

RESULTS AND DISCUSSION

Profile Factor Inputs in Mindanao

The findings above showed that of all the schools division in Mindanao Region, Bukidnon registered as the highest mean in all factor inputs like number of male enrollees, number of female enrollees, number of desk, number of classrooms and number of teachers. On the other hand the division who had the lowest mean in factor inputs is the city division of Dapitan City.

This implies that Bukidnon had increased their number of female enrollees and male enrollees because of the number of desk, classrooms and teachers. The Department of Education in Dapitan should increase their number of male and female enrollees, number of teachers, desk and classrooms.

Profile Factor Outputs of Mindanao by School Division

Based on the above findings it was found out that of all the schools division in Mindanao, the city division of Davao City had the highest mean in terms of a number of male enrollees, number of female enrollees, number of desk, number of classrooms and number of Teachers. It implies that this division had used the allocated budget properly in constructing desk and classrooms and employed most number of teachers that are why there are an increased number of male and female enrollees throughout the period from 2002-2010. Meanwhile, the division of Dipolog city had the lowest mean in factor inputs like in number of male enrollees, number of female enrollees, number of desk, number of classroom, and number of teacher. It implies that there something wrong in the development planning in

this division. It suggest that the allocation of budget in the physical resources needed in this division.

Technical Efficiency of Schools Division in Mindanao

The TE scores of the 48 schools division in Mindanao were calculated with the number of male enrollees, number of female enrollees, number of desk, number of classroom and number of teachers as the input variables. Adopting the output orientation, the TE scores indicate the potential to increase the quantities of outputs used in producing given quantities of inputs. DEA-generated outputs on TE are shown in appendix G.

Summary of Technical Efficiency of Mindanao

The table below presented the Mean Technical Efficiency Scores of 6 Regions of Mindanao namely Region 9, Region 10, Region 11, Region 12, Caraga Region. Based on the result among 6 regions only region 9 achieved full Technical efficiency level in the year 2006 and least efficient in the year 2002 with their(TE= .983). Region 10 has achieved the highest TE (.997) scores but least efficient during the period of 2002. Compare to other results, Region 11 have reached the highest TE (.991) scores in the year 2006 and least efficient in 2009. Meanwhile, Region 12 did not reached full TE throughout the 8 periods have achieved only TE of .997 but least efficient in 2006. Caraga Region have achieved the mean of TE (.997) same year with region 11 and 12, on the other hand, all schools division understudy in region 12 did not fully achieved the TE in the year 2003 3 with their TE (.986) score.

Moreover, what happened in ARMM region has only reached .989 TE scores with least mean average on the year of 2002. In general view of the mean average of mean scores from 2002-2010 from all regions, it can be observed that no one of the regions achieved full Technical efficiency level. Nonetheless, three of the regions in Mindanao have achieved the highest TE of .992 these are the region 9, 12 and Caraga while the Region 10 stands as second to the highest rank when it comes to the TE score and this is Region 10. On the other hand, Region 11 rank 3rd with the TE scores of .978 and the least TE among the regions

is ARMM. This implies that Regional Office of the Department of Education in ARMM region should look over the School Improvement and Annual Improvement Plan to determine which among the factor inputs that should be increased in order to attain the Education for All in ARMM region likewise with other regions. However, according to the report of Ibon it was stated that adequate funding is needed to attain EFA goals, a requirement which has become a problem of the education sector as foreign debt servicing, remains to be a priority over the past several administrations. Furthermore, the report said this year that still this year the budget is insufficient to address the shortages in schools facilities and classrooms since it is originally intended to fund the additional two years in elementary level. The government aims to acquire only 18,000 new classrooms out of 152 needed, 10,000 new teachers out of 103, 599 shortage, and only 32 million new textbooks out of 95 million shortage .

Table 1. Summary of technical efficiency of Mindanao

Regions	Efficiency Score										Mean
	2002	2003	2004	2005	2006	2007	2008	2009	2010		
Region 9	0.983	0.992	0.985	0.993	1.000	0.997	0.990	0.998	0.992	0.992	
Region 10	0.997	0.996	0.984	0.992	0.976	0.985	0.993	0.978	0.982	0.987	
Region 11	0.969	0.981	0.982	0.972	0.991	0.987	0.981	0.968	0.979	0.978	
Region 12	0.987	0.986	0.996	0.995	0.997	0.996	0.994	0.994	0.990	0.992	
Caraga Region	0.996	0.989	0.986	0.995	0.997	0.994	0.993	0.987	0.988	0.992	
ARMM Region	0.863	0.908	0.864	0.955	0.944	0.934	0.989	0.983	0.961	0.933	

Allocative Efficiency of Schools Division of Mindanao

A decision making unit (DMU) is said to be allocatively efficient when for a certain level of production, inputs are used in the proportion which maximizes the cost of production, given input prices (SCRCSSP, 1997). In this study, allocative efficiencies of the 48 schools division in Mindanao Region were calculated using the two output variables-

number of male graduates and number of female graduates and five inputs variables- number of male enrollees, number of female enrollees, number of desk, number of classrooms and number of teacher. DEA-generated outputs found in Appendix H.

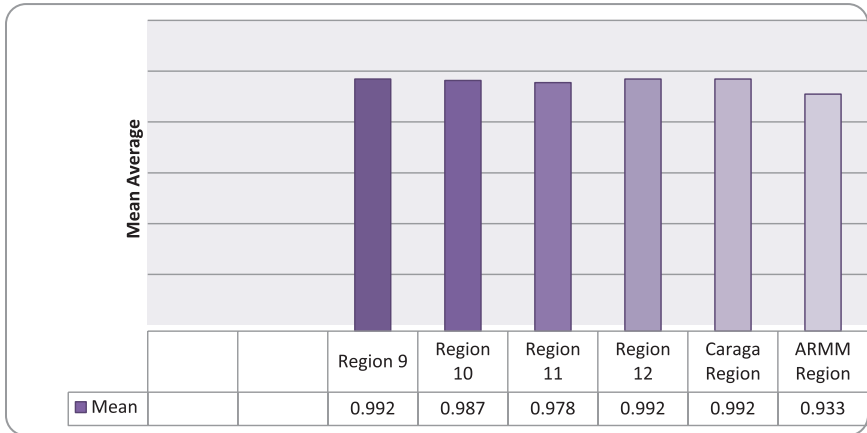


Figure 9. Summary of Mean Average of 6 Regions in Mindanao Region

Summary of Allocative Efficiency of Mindanao

The table below presented the Mean Allocative Efficiency Scores of 6 Regions of Mindanao namely Region 9, Region 10, Region 11, Region 12, Caraga Region. Based on the result among 6 regions no one did not achieve full achieved full Allocative efficiency level . Thorough out the period region 9 achieve highest AE (.295) in the year 2009 and least efficient in the year 2008 with their (AE= .008). Region 10 has achieved the highest AE (.365) scores but least efficient during the period of 2003. Compare to other results, Region 11 have reached the highest AE (.277) scores in the year 2006 and least efficient in 2003 with AE of .076 Meanwhile, Region 12 did not reached full AE throughout the 8 periods have achieved only AE of .239 but least efficient in 2003 with AE score of .040. Caraga Region have achieved the mean of AE of (.293) in the year 2009 and least efficient with AE score of .076. Moreover, what happened in ARMM region has only reached .261 AE

scores with least mean average on the year of 2002. In general view of the mean average of mean scores from 2002-2010 from all regions, it can be observed that no one of the regions achieved full Allocative efficiency level. Nonetheless two of the regions in Mindanao have achieved the highest AE of .339 these are the region 9 and 10 while the Caraga stands as second to the highest rank when it comes to the AE (.299) score. On the other hand, ARMM region rank 3rd with the AE scores of .243 and the least AE among the regions is region 12 with AE of .200.

Table 2. Summary of allocative efficiency of regions of Mindanao

Regions	Allocative Efficiency								Mean
	2003	2004	2005	2006	2007	2008	2009	2010	
Region 9	0.225	0.238	0.376	0.177	0.177	0.008	0.295	0.226	0.339
Region 10	0.133	0.131	0.365	0.276	0.150	0.159	0.292	0.216	0.339
Region 11	0.076	0.090	0.277	0.240	0.240	0.187	0.254	0.230	0.200
Region 12	0.040	0.126	0.210	0.140	0.140	0.061	0.239	0.203	0.269
Caraga Region	0.134	0.167	0.238	0.123	0.123	0.076	0.293	0.246	0.299
ARMM Region	0.029	0.150	0.174	0.116	0.115	0.115	0.051	0.261	0.243

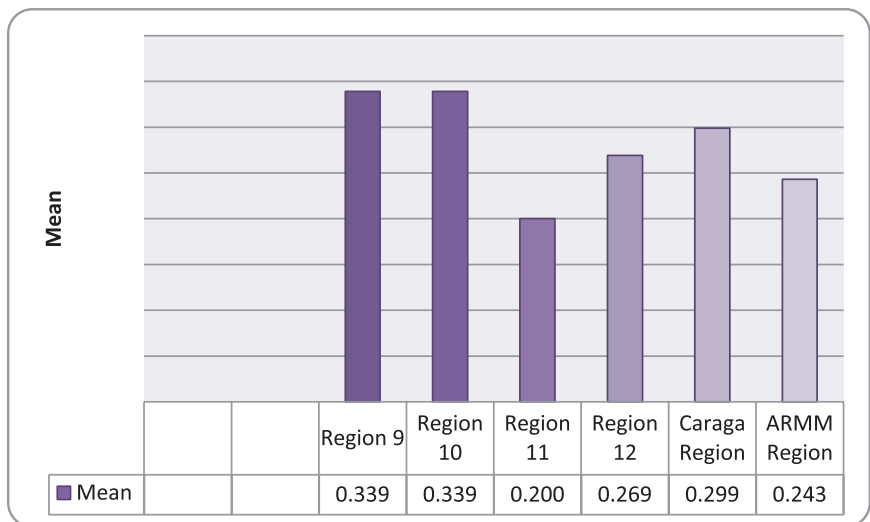


Figure 10. Summary of Allocative Efficiency of Regions of Mindanao

Productivity Change of Schools Division in Mindanao

Productivity Growth of the School Division was estimated by calculating and examined by calculating the Malmquist total factor productivity (TFP) indexes.

Changes in the average schools division productivity and its components (i.e technical change and efficiency change) for all schools divisions in the data set and for each schools division are reported in table . The result indicate that over the period of 2002-2009 time period there has been a rather low productivity growth (TFPCH) of approximately .9% per year for schools divisions in Mindanao Region under study. This growth was primarily attributed to technology improvement (TECHCH) of .7% juxtaposed the very minimal regression in efficiency by .2%.

Productivity Efficiency of Schools Division in Region 9

On a year to year performance, the schools division in Region 9 exhibited positive productivity growth throughout the 8 years. Among 8 divisions in Region 9 the highest productivity growth (TFPCH=1.021) with the biggest ascent occurring in 2002 at 1by 3.2 % contributed solely by TECHCH . It can be recalled that Zamboanga del Sur. Divisions were fully technically efficient during the period from 2002 to 2010 thus any change in the TFP during these years were purely due to TECHCH contributions.

The TFP growth in 2002 could be attributed to the increased of quantity of factor inputs like number of male and female enrollees, number of desk, classrooms and teachers to increase the number of male and female graduates.

The second in rank when it comes to the productivity growth is Isabela City TFPCH (1.016) this is brought about by technological change (1.008) by an efficiency improvement of (EFFCH=1.262) that occurred in the said year.

The performance of Dapitan City divisions ranked both third with the productive performance of (TFPCH= 1.009) such technical change is (TECHCH=1.008) with an efficiency change of (EFFCH= 1.003). Among the eight divisions in Region Zamboanga Sibugay is the least

productive when it comes to the performance in achieving access to primary education due to TFPCH= .995). This implies that they should increase the utilization of the factors inputs to increase the number of male and female graduates as one of the indicators in achieving education for all.

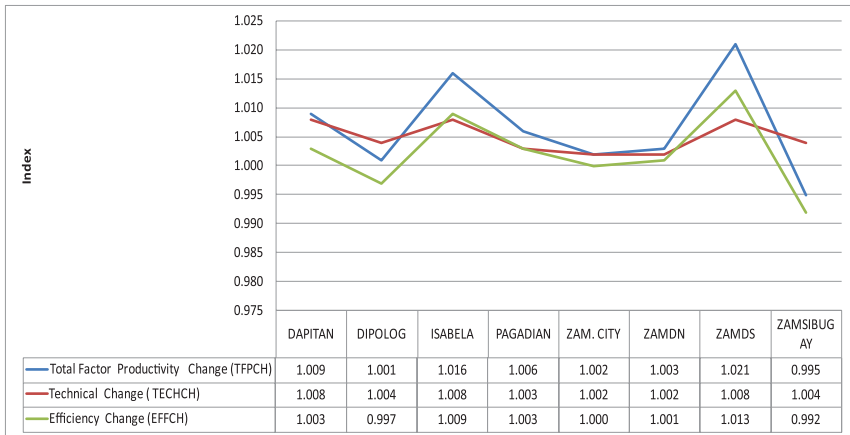


Figure 11. Productivity Growth of Region 9

Productivity Growth of Region 10

In region 10, the city division has the highest productivity growth from the period of 2002-2010 is Lanao del Norte (TFPCH=1.055) with 5.5 % growth per year due to the efficiency improved of 5.2 % . The second in rank is Cagayan de Oro City and the least productive division is Camiguin (TFPCH=.998) this is due to 99.4 % technological regression with least efficiency change (EFFCH=.994).

Productivity Growth of Region 11

As we can glean in the graph, Davao City has experienced productivity growth among all the division in Region 1. The growth is brought about by improvement in efficiency EFFCH (1.001) and coupled with positive shift in technology (1.026). The least productive in this region is the city division of Panabo city due to the technological

regress of 1.001 with an improvement of (EFFCH= .992).

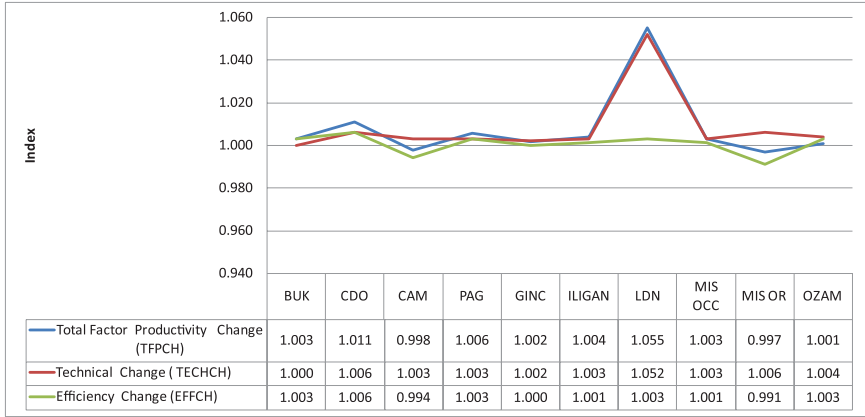


Figure 12. Productivity Growth of Region 10

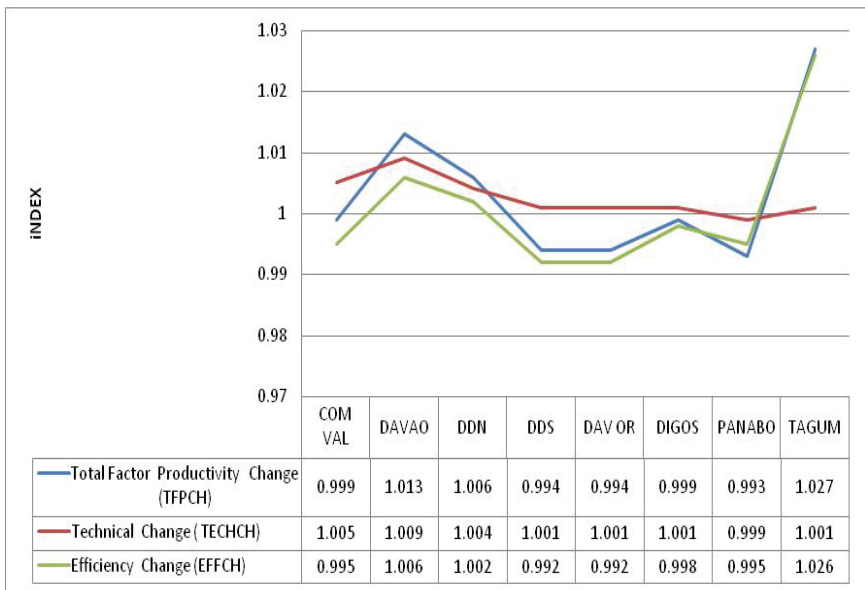


Figure 13. Productivity Growth of Region 11

Productivity Growth of Region 12

The highest productivity growth performance was registered by the division of Kidapawan from the period of 2002-2010 (15%). This was brought about by improvement in efficiency (EFFCH= .998) coupled with positive shift in technology (TECHCH= 1.019). Though Kidapawan is only second in rank have achieved full technical efficiency from the period of 2002-2010 still there is an improvement in the achieving education for all when it comes to the number of male and female graduates.

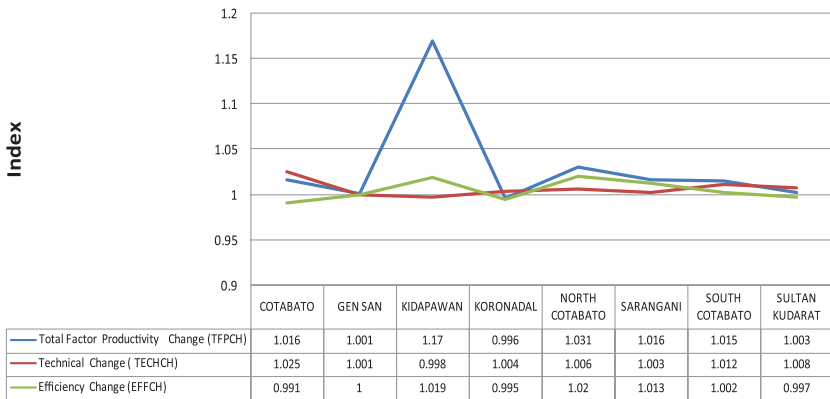


Figure 14. Productivity Growth of Region 12

Productivity Growth of CARAGA Region

The actual performance of the schools division in Caraga region was shown in the figure. It can be observe that the most productive division is Surigao City (9.6% percent per year with an improvement of technological change of (1.087) with the contribution of an improvement of efficiency of 1.005. The least productive division are Agusan del Sur and Agusan del Norte.

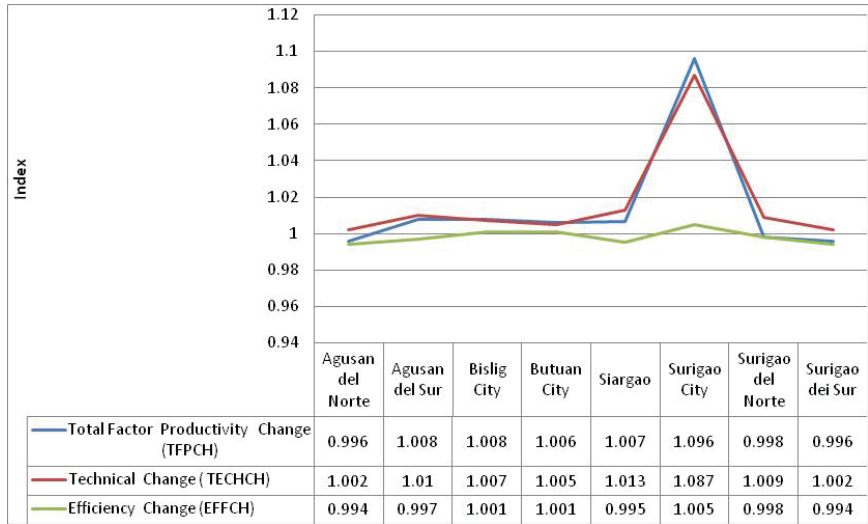


Figure 15. Productivity Growth of Caraga Region

Productivity Growth of ARMM Region

The highest productivity growth performance was registered by Lanaodel Sur II through the period of 2002-2010 (812%). This was brought about by improvement in efficiency (EFFCH= 1.1) coupled with positive shift in technology (TECHCH= 1.015).

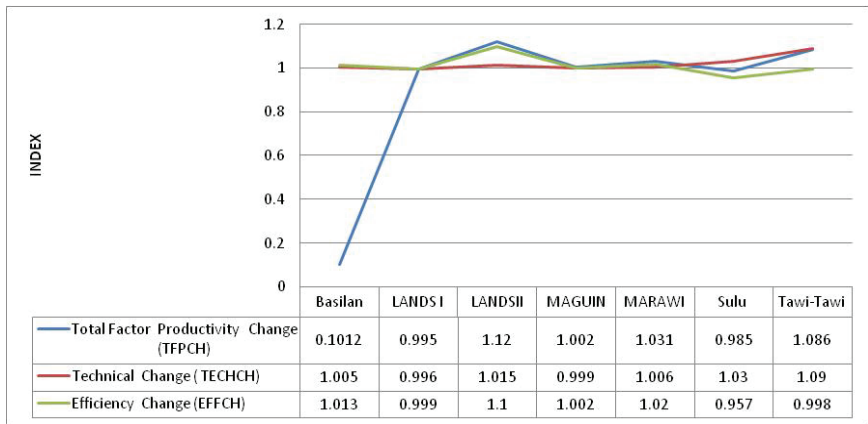


Figure 16. Productivity Growth of ARMM Region

Difference in the Efficiency Score of Schools Division in Mindanao

All schools divisions in Mindanao Region are clustered by Region for purposes of evaluating the performance of schools Division in utilizing the factor inputs to attain the education for All. All the schools division was managed by District supervisors, School Principal and Teacher-in-Charge.

To determine whether or not there is a significant difference in the efficiency scores of school divisions in Mindanao when grouped by region, Analysis of Variance was undertaken. Output are found in the Appendix J.

Difference in the Technical Efficiency of Schools Division

It was presented in the table to determine if there is a significant difference of among schools division when grouped by region. Based on the result the technical efficiency (TE=.01 scores of schools of all schools divisions from period of 2002 showed a significance difference as well as in the year 2003 the TE=.001 showed a significance difference when it comes to the technical efficiency scores among school division when grouped by region.

It was shown in the appendix the pos hoc analysis. Based on the result to in the year 2002 TE score between Caraga and ARMM showed a significance difference of .043. On the other hand, in the year 2004 the TE scores between Region 9 and ARMM showed a significance difference with a sig. value of .017. There is also significance difference between Region 10 and ARMM with a sig value of .010. While the result between Region 11 and ARMM is shown also a significance difference with a sig value of .017 likewise the result of between region 12 and ARMM it also showed a significance difference with a sig value of .016 as well the result between ARMM and CARAGA showed a significance difference with a sig value of .016.

Table 3. Difference in the technical efficiency of schools division

TE Region	Mean Square	F	Sig.	Remark
TE 2002- Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9829 .9961 .9691 .9873 .9958 .8629	3.530	.010	Significant
TE 2003 -Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9921 .9956 .9813 .9904 .9888 .9076	1.598	.181	Not Significant
TE 2004 -Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9852 .9852 .9821 .9964 .9860 .8636	5.258	.001	Significant
TE 2005 -Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9930 .9904 .9723 .9947 .9954 .9545	2.033	.092	Not Significant
TE 2006 -Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9999 .9767 .9912 .9970 .9966 .9842	1.300	.280	Not Significant
TE 2007 -Region 9 Region 10 Region 11 Region 12 CARAGA ARMM	.9999 .9767 .9912 .9970 .9966 .9435	.951	.458	Not Significant

TE 2008 -Region 9	.9969	.087	.551	Not Significant
Region 10	.9847			
Region 11	.9870			
Region 12	.9961			
CARAGA	.9936			
ARMM	.9342			
TE 2009 -Region 9	.9898	1.730	.147	Not Significant
Region 10	.9932			
Region 11	.9790			
Region 12	.9942			
CARAGA	.9950			
ARMM	.9892			
TE 2010 -Region 9	.9915	.807	.551	Not Significant
Region 10	.9843			
Region 11	.9794			
Region 12	.9896			
CARAGA	.9813			
ARMM	.9609			

Difference in the Allocative Schools Division

All schools divisions in Mindanao Region are clustered by Region for purposes of evaluating the performance of schools Division in utilizing the factor output to attain the education for all. All the schools distribution of the MOOE by schools divisions were decided by Department of Budget and Finance in the Main office of Department of Education in Pasig City, Manila manage by District supervisors, School Principal and Teacher-in-Charge.

To determine whether or not there is a significant difference in the allocative efficiency scores of school divisions in Mindanao when group by region, Analysis of Variance was undertaken. Output is found in the Appendix.

Based on the result the allocative efficiency scores in the year 2005 showed a significance difference with a sig value of .005 in their allocative efficiency score of schools divisions when group by region.

Post hoc analysis was done using the SPSS, the result showed that there is a significance difference on the Allocative Efficiency Score between Region 9 and ARMM with a sig value of .033. On the other hand, there is also significance difference when it comes to the AE

among schools division when group by region with sig. value of .038 and .033 sig value between ARMM and Region 9 while between ARMM and Region 10 showed a significance difference with sig. value of .038.

Sources of Inefficiency of Schools Division

Table supplies the sources of inefficiency of the Schools Division in Region X during the period of 2002 using tobit regression. The logarithmic value on the number of male enrollees and number of female enrollees are found to show statistical significance at alpha level of .05. Furthermore the number of desk, classroom and Teachers showed also significance difference at alpha level .10.

The statement translates that in every male and female enrollees added to the number of male and female graduates by the schools divisions through male and female enrollees will increase its efficiency by 15 percent for male and 16 percent for female. On the other hand, every added to the number of male enrollees will increase efficiency by 1.5 percent. On the other hand another translation state that every added of number of classroom it will increase efficiency by 22.4 % percent. On the other hand, the statement translates that in every classrooms and desk added to the number of male and female graduates by the schools divisions through number of classrooms will increase its efficiency by 22.4 percent for number of classrooms and 56.2 percent for female. This observation is consistent to the findings of some authors that efficiency performance of a firm is associated to its production performance. While increasing the input entails additional resources in the part of the firm which adversely affects its efficiency performance.

Table 4. Sources of inefficiencies of schools division in Mindanao Region

Variables	Coefficient	Standard Error	Z-values	p-value
Constant	.9666616	0.019400	9.797*	0.0000***
Log(Number of Male Enrollees)	0.0000157	0.00000557	2.82	0.0048***
Log(Number of Female Enrollees)	0.0000160	0.00000504	-3.18*	0.0015***
Log(Number of Classrooms)	0.000224	0.000108	2.07	0.0380
Log(Number of Desk)	-0.00000562	0.00000326	-1.72	0.0847
Log(Number of Teacher)	-0.000145	0.00008378	-1.72	0.0842
Log-likelihood	60.02			
SE	0.167			

*significant at 0.05 alpha

*significant at 0.10 alpha

CONCLUSION

Based on the data set used and on the foregoing findings made on the technical and allocative efficiencies and the productivity growth and the significance difference on the TE and AE scores of schools division in Mindanao the following conclusions are drawn:

1. The technical efficiency of a schools division in region 9 is linked to its production performance which refers to the number of male and female graduates as basis for the performance of the schools when it comes to the full implementation of access to primary education or education for all. As manifested by the result in Region 9, it emerged as one of the only three technically efficient

schools divisions out of the 8 divisions others under investigation. The least efficient school division such as Isabela City ranked last in actual output performance, both in the number of male and female graduates through technology services. In region 10 Iligan City ranked 1st consistently from the period of 2002-2010 based on their TE. Camiguin have shown difficulty in achieving full technical efficiency and ranked as last among others division in Region 10. In the case of Region 11, there were two schools division exhibit full TE from the period of 2002-2010 these are but not as good as the performance of Tagum City ranked last in all divisions. General Santos City and Sarangani showed full technical efficiency thorough out the period. While in the case CARAGA region, Agusan del Sur and Butuan City have reached full TE and the least efficient school division is Bislig City.

In ARMM region the it can be concluded based on the result among the city divisions, only Maguindanao exhibit full TE throughout the period. Meanwhile, the city division of Lanao del Norte is the least efficient schools division when it comes the TE scores presented in the table. In general view of the mean average of mean scores from 2002-2010 from all regions, it can be observed that no one of the regions achieved full Technical efficiency level. Nonetheless, three of the regions in Mindanao have achieved the highest TE of .992 these are the region 9, 12 and Caraga while the Region 10 stands as second to the highest rank when it comes to the TE score and this is Region 10.

On the other hand, Region 11 rank 3rd with the TE scores of .978 and the least TE among the regions is ARMM. This implies that Regional Office of the Department of Education in ARMM region should look over the School Improvement and annual Improvement Plan to determine which among the factor inputs that should be increased in order to attained the Education for All in ARMM region likewise with other regions.

2. Among all the schools division under investigation were efficient in MOOE budget utilization in some years of operation as manifested by the result. In general view of the mean average of mean scores from 2002-2010 from all regions, it can be observed that no one of the regions achieved full Allocative efficiency

level. Nonetheless two of the regions in Mindanao have achieved the highest AE of .339 these are the region 9 and 10 while the Caraga stands as second to the highest rank when it comes to the AE (.299) score. On the other hand, ARMM region rank 3rd with the AE scores of .243 and the least AE among the regions is region 12 with AE of .200. Most of the schools efficiently utilized their MOOE budget in proportion that minimized the cost of production in the period of the study (2002-2010).

3. Growth and regression in productivity were observed among the schools division in all regions of Mindanao in the 9-year period of the study. Components of the productivity change are due more to technological (TECHCH) and total factor productivity changes (TFPCH) with efficiency changes (EFFCH) providing a gap.
4. Based on the result, there is a significant difference in terms of Technical Efficiency when grouped by region. There is also a significant difference when it comes to allocative efficiency among school divisions when grouped also by region.
5. Improved technical efficiency is obtained by increasing the number of male and male enrollees, desk, classrooms and teachers a through technology services.

RECOMMENDATIONS

Based on the conclusions, the following recommendations are given:

1. Considering that out of the 48 schools divisions only 10 proved to be both technically efficient and 40 schools division did not achieved full technical efficient, it is important that best practices, improvement plan and annual improvement plan of 10 schools division should be shared among other schools divisions.
2. Provincial, Municipal and Local Government Units among the efficient schools divisions should open their development plan in education sector especially the allocation of budgets shared by this agency to let other divisions informed and applied its practices. For those 40 schools divisions who have difficulty in achieving the full Technical efficient should revisit their school

improvement plan and annual improvement plan and make a thorough monitoring and evaluations of the accomplishments of different schools divisions. The head of the different schools divisions should devise strategies and approaches that will improve program implementation. Specifically, schools division should endeavor to increase the number of male and female enrollees, number of desk, classrooms and teachers because it was found out that efficiency of 10 schools divisions is influenced by their performance.

Since no one of the schools division achieve full Allocative efficiency thus, the need to improve government spending on basic education remains a priority, it must be done with deliberate steps towards fiscal discipline especially on efficient utilization of the basic education budget. It is to be emphasized that increasing the budget does not necessarily translate to expected outcomes.

Thus, it is imperative that the DepEd continue to effectively and efficiently utilize resources within budget constraints and institutionalize cost-saving measures. Which know the real needs of the communities should be strengthened and empowered as indispensable partner in education reforms. It is high time that the Local School Board be made a true catalyst for change at the local level. This requires making its processes more transparent and membership more inclusive especially to those who are supposed to benefit from the Special Education Fund (SEF).

3. The government must also improve the demand side, i.e., improving the economic conditions of household for them to afford basic education while at the same time looking at ways on how to reduce its cost.
4. The Conditional Cash Transfer aptly called the Pantawid Pampilyang Pilipino Program (4Ps) of the incumbent administration is a good start for easing the burden of the hidden cost of education among families especially the poor. However, mechanism should be in-place so that the cash assistance is really used for the benefit of the children. This requires regular monitoring of household beneficiaries with special focus on learner beneficiaries. While one conditionality is the 85%

- attendance rate per month of learner beneficiaries, this should also include providing parent literacy program.
5. Revisit the accomplishments of the targets if EFA, and make a good intervention to increase the factors inputs such number of desk, classroom, teachers, and male and female enrollees that would conduct of efficiency and productivity evaluations of all the schools division starting within the schools, municipal, regional and national would improve their operation thus leading them to achieve their full potentials.
 6. Moreover, related studies may be conducted, using the findings in this study as benchmark, specifically to include other variables which are considered important aspects of the schools divisions operation.
 7. Within the education bureaucracy, greater attention and support should be given to the level where actual teaching-learning process takes place, which may either be the formal school or non-formal. The school should be seen as the focus and the locus of educational development and must thus get the attention it deserves from its primary stakeholders – the principal, teachers, students, youth, parents and the community as well as the higher administrative level.
 8. It is also necessary for the DepEd to exercise greater oversight role over its content, methodology and development plan of the Education for all. To effect a comprehensive quality assurance, the Department of Education in all Regions in Mindanao in collaboration with the Provincial and Local Government Units, should promote a well designed and unified pre-service – in-service educational program dovetailed to the actual needs of schools, teachers and managers especially in achieving MDG 2 which is the access to primary education.

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