Moreover, for the same study period (2009-2011), 11 hospitals (3 Tertiary, 4 Secondary and 4 GH-HC), have reached the maximum TE, PTE and SE which means the best performance based on utilization of resources and production scale. Among these hospitals were included the Childrens' Hospitals of Athens and Patras, probably because they were operated with lower costs than the adult hospitals, such as a Large Hospital of Salonika (3rd HCR), two Middled-sized Hospitals (6th HCR) and four General Hospitals - Health Care Centres (one from 2nd HCR, one from 4th HCR and two from 6th HCR).

### Technical efficiency

For the year 2011, the technical efficiency for the remaining hospitals (excluding the benchmark units) is ranged from 26% to 99%. In fact, comparing the results of 2010 study, seven secondary care hospitals managed to achieve a much better indicator of technical efficiency up to 90% or higher, reaching almost the performance of the best practice units. Those hospitals can be considered among the model hospitals, and follow the same or an even more productive clinical and administrative work.

Specifically, the mean of the technical efficiency for large hospitals was estimated at 80%, for middle hospitals at 82% and for GH-HC at 89%. These results are similar to the findings of the 2010 study. The respective figures were lower in 2009 with an estimated technical efficiency at 83% for the tertiary care hospitals, 64% for the secondary care hospitals and 86% for GH-HC (Figure 2).

Out of the 29 hospitals, 23 large hospitals presented lower technical efficiency. Most of these hospitals reached moderate to very high technical efficiency and only seven hospitals presented quite low technical efficiency below 70%. Basically, the biggest problem occurred in two hospitals of the 1st HCR (51% and 56% technical efficiency respectively) because they treat difficult and severe cases, due to their nature and specialty, and have higher than the average (6 days) duration of hospitalization. This analysis compares these hospitals with other similar size hospitals of this category.

However, it is imperative for the administration of the hospital and its staff to make greater efforts to improve the efficiency of the hospitals, even though the severity of the cases could explain to some extent these results.

For the medium-sized hospitals, the majority of the hospitals showed moderate to very high performance. Only 17% of medium-sized hospitals in the sample have reached low to very low technical efficiency (i.e. less than 70%). However, two hospitals presented again extremely low technical efficiency (26% and 49%) which shows a further reduction of this indicator during the year 2011, a decrease of approximately 7% - 10% between 2010 to 2011.

The hospitals of the last category (GH-HC) have achieved the highest performance improvement. Specifically, 16 out of 17 small hospitals reached technical efficiency scores over 70%. Certainly, the small capacity hospitals are considered precisely productive because of their extremely small size (50 beds on average) and the superior performance of their outpatient departments. Therefore, it is important to reinforce the activities of the Primary Health Care (PHC), the rehabilitation Centres of chronically ill patients, and other relevant units.

Furthermore, the test results from the repeated analysis showed that the measures for the dependent variable TE,