

CHAPTER 7

CONCLUSION

7.1 SUMMARY OF THE FINDINGS

The objective of this study is to make an exploratory assessment on the growth and efficiency performance of the Malaysian mobile telecommunications industry over the period of 1996 to 2001. The study applied the Malmquist productivity index to measure productivity and efficiency growth. With this approach, productivity growth can be decomposed into two components: technical change and efficiency change. This decomposition would help to identify the contributions of technical progress and improvement in efficiency to productivity growth in Malaysian mobile telecommunication production.

The DEA approach was used to calculate the component distance functions of the Malmquist index and constructed the best-practice (efficient) frontiers for all the service providers in the industry. The technological change index and the technical efficiency ~~change~~ index were obtained by comparing each operator to the best-practice frontier of the industry. The Malmquist productivity index was then calculated as a product of these two indexes.

Among the five service providers, Maxis is persistently technically efficient and the major innovator throughout the period of the study while TM Cellular and Celcom were the least technically efficient operators under the CRS and VRS versions of technology respectively. Nevertheless, Celcom had showed a positive improvement in technical efficiency over the years 1996 to 2001 alongside with DiGi relative to the technically feasible production possibilities. In fact, Celcom recorded the highest annual average growth in the period of 1996 to 2001 for TFP and technical efficiency with 57 percent and 11.9 percent growth respectively. The study also indicates that pure efficiency appears to be a major source of growth to technical efficiency as compared to the scale efficiency component for all the five operators.

For the whole industry, TFP has increased significantly (at least 25 percent) throughout the period of 1996 to 2001 with the year 1999-2000 recorded the highest growth. Indeed, this particular period also recorded the highest technical efficiency at a rate of 12.2 percent. Moreover, starting from this period, it also manifests an extensive improvement in technical efficiency with the maximum potential output for almost all the operators under the VRS technology. In general, this growth is likely the result of market liberalization through the enactment of Communications and Multimedia Act (1998) and ~~Malaysian~~ **Malaysian** Communications and Multimedia Act (1998).

In conclusion, it should be noted that the very presence of TFP growth in the industry has been mainly due to technical improvement with more than 95 percent compared to the efficiency component. This result therefore indicates that higher TFP

growth could be achieved by optimizing technology possessed within the industry. Thus, program and training which is designed to familiarize and improve technical and managerial expertise would be important ingredients to achieve higher productivity in the near future.

It is hoped that based on this empirical study of productivity in the Malaysian mobile telecommunication industry, it will provide a basis for the formulation of a more effective decisions concerning productivity and efficiency by the respective operators as well as the regulator. Further research however, needs to be directed to the policy formulation as well as its implications in order for the Malaysian mobile telecommunications industry to be in a better position in this fastest growing and a very competitive industry.