CHAPTER V

CONCLUSION AND FUTURE RESEARCH

This research has examined how the exponential smoothing method can be applied to resource usage prediction in server virtualization. More specifically, the decency of resources allocation was investigated based on the needs for research exploration. Some contributions and implications of this research are described, along with future work to be pursued.

5.1 Contributions and Implications of this Research

This research investigates the problem of predicting resource usage, especially CPU and memory usage, with constraints on resource utilization in order to achieve the best response time of a virtualization system. The research starts with exploration of user behavior and resource behavior that are different in each service and period of time, wherein all tasks are running in virtualization environment.

Unlike other predictions, the proposed prediction involves consideration of resource utilization that compromises between the system response time and resource utilization. High utilization may prolong system response time. On the other hand, low utilization may shorten system response time and leave some resources idle. The methods of double exponential smoothing technique with utilization compromising factor are incorporated in this research. The proposed method is tested with the actual data and compared with association rules and ARIMA. The prediction produces the higher accurate results than those of the other methods. The proposed compromising factor can be effectively used to allocate resources to meet the acceptable system response time.

5.2 Future Research

Typically, the behavior of request for resources of a server is rather inconsistent. It may depend upon operation time of the system, the number of users, or the demands of users' programs. The parameters used in the predicting algorithm as well as the utilization compromising factor must be periodically adjusted to conform with up-to-date situation. Identifying the resource requesting behavior of the system according to time must be further studied.