SUMMARY

Singapore with a population of 3.2 millions and land area of 648 KM$^2$, lacks the necessary local work force and natural resources to sustain its local construction development works. Therefore, it has to depend heavily on foreign work force and import of construction raw materials from neighbouring countries to support the local construction industry. Due to the readily available foreign work force, the local construction industry adopts a labor intensive construction system and as a result, is not productive. To overcome the problem of low productivity, HDB has cultivated a culture of innovation to seek out new breakthroughs in design, material and construction technology through our various quality initiatives.

As construction methods are, to a large extent, determined by the design, great emphasis is placed during the design stage to produce highly buildable designs for our high-rise building construction projects. Increasingly, our buildable designs are used in the industrialized construction methods which has enabled us to achieve higher productivity levels in recent years.

The Housing and Development Board is Singapore's public housing authority. Since its inception in 1960, the HDB is credited with completing well over 800,000 housing units, which currently house 86% of Singapore's population. The changing demands for the design and construction of public housing can be clearly seen over the years. In the early 60's the objective was to build enough units as quickly as possible to provide for urgent housing needs. The emphasis then was less on aesthetics. By the mid
70's the housing situation had improved and more attention needed to be given to provide a total living environment for residents.

To keep the industry in pace with technological advancements, HDB embarked on an industrialization program that forced the construction industry to break new inroads in productivity. This trend carried on to the 80's and in the 90's new concepts like mass customization began to emerge. This dissertation focuses on how creative systems and the technological innovations were adopted to fulfill the varying demands on high rise building construction. It also focus on economic comparison between cast in situ high-rise residential and precast high-rise residential. The industry needs to rethink its current operations initially with the view to reorganize the entire construction business processes.

The purpose of this dissertation is to examine the current practice of prefabrication technology in our ever-changing industry. The identification of the most likely problems hindering effective use and likely solution to improve the status quo are presented. They include the history and development of prefabrication concept, its benefits, the industry perception, the obstacles, and the factors of success.