CHAPTER 1

INTRODUCTION

1.1 BACKGROUND OF STUDY

Even though the construction industry have become more advanced in technology such as Industrialized Building System (IBS), but the usage of brick in construction is still on demand. The growths of the construction are increasing with the increased in population for people to fulfill their living needs. According to the Department of Statistic, Malaysia, the population for year 2010 is 28.6 million, and it is expected to rise by 10 million to 38.6 million in year 2040.

![Figure 1.1: Chart of Population projection and annual population growth rate, Malaysia](image)

Source: Department of Statistics, Malaysia
The production of bricks is about 1391 billion units in worldwide annual and it is expected that the demand of bricks will continuously rising. By using bricks, the building constructions have high compressive strength and durability in order to protect from foreign disturbance. The advantages of bricks to the structural component of a building are, brick can resist multiple resistance against heat and sound. The bricks components also act as an insulator to the certain part of building component due to the resistance. The building construction can become much easier, faster and cheaper, in term of workability. One of the most accommodating masonry units is bricks, due to its physical, chemical and mechanical properties. Bricks can be classified as one of the back boned of building construction.

Malaysia is full with natural waste materials such as agricultural and industrial waste. Those waste can be recycle into useful material, which is into renewable buildings materials. The rising in population, automatically the waste materials and the amount will increase according to the growth in population. Some of the non-decaying waste materials will remain in environment, perhaps for thousand years. The waste materials could cause a crisis, and then contributing to the environmental problems. However, to minimize or to overcome the environmental problem is by making a uses of these waste material into a potential material, and helps to maintain a good environments.

The potential of using agricultural waste in buildings construction material has been investigated by various researchers. These automatically will double the advantage, which are disposal of waste material and reduction in construction cost. Malaysia can be categories as a countries where have abundant waste material, those waste material can be used as a potential material in buildings construction. One of the abundant waste materials is a coconut shell.
Coconut shell is a form of agricultural solid waste. After the coconut is scraped out from the shell, the shell is usually discarded as wastes. Coconut shell has surface texture which is fairly smooth on the inside and rough on the outside and it is one of the most promising agricultural wastes with its possible uses and it has a good workability. A coconut shell can be used for construction material application, it would definitely not only beneficial towards the environment, but also can be advantageous for low income families as, it can be used for the construction of low cost houses. More than ninety three countries have grown a coconut tree. South East Asia is classified as the origin of coconut. According to the Ministry of Agriculture and Agro-based Industry, Malaysia, the achievement and coconut production for year 2015 is 810 million, and it is expected to rise by 400 million to 1,210 million in year 2020.

**Figure 1.2: The Areas of Primary Coconut Production**

Source: Department of Agriculture, Malaysia