CHAPTER 1

INTRODUCTION

1.1 BACKGROUND

Traffic congestion is a normal phenomenon associated with transportation, especially in urban areas. Congestion is one of the problems involving road. Normally, network congestion occurs on land transport on roads.

As demand approaches the capacity of a road or of the intersections along the road, extreme traffic congestion will sets in. When vehicles are fully stopped for periods of time, this is colloquially known as a traffic jam or traffic snarl-up. Traffic congestion can lead to drivers becoming frustrated and engaging in road rage.

Managing Urban Traffic Congestion Report (2007) stated that traffic congestion refers to the physical phenomena related to behavior or situations that prevent the movement of vehicles to each other in order to get the limited space on the road to achieving maximum capacity. Congestion also refers to the phenomenon in relation to the expected performance of the service road system vis-a-sis (networked).

Congestion also is the inability to move (immobility). Congestion is a phenomenon in which long lines of vehicles moving slowly or stopped at the highway city, suburban highways or city streets. Congestion can occur every day at the same time at a specific location that is referred to as recurrent congestion or accidents during road maintenance or availability of any non-recurring congestion. Normally, congestion occurs when the road system cannot accommodate the volume of traffic at a reasonable speed, there is a conflict
between the various types of traffic such as cars, trucks, buses or pedestrians and traffic control are not used efficiently. Convergence path, decreasing the capacity of a sudden, that movement is stuck or increased friction also led to increased traffic congestion (Rahim F. (Ray), 1997).

In addition, according to Daniel Mohamed (1993), congestion occurs due to the long queue of vehicles along the way and the vehicle cannot move smoothly due to certain obstacles. Among the forms of barriers that exist are a crossroads and traffic lights that affect delay, accidents, floods as well as road maintenance.

Apart from that, Bruton (1982) stated that, traffic congestion can cause discomfort and emotional problems (anger, worry and stress of mind) that can interfere with a driver's concentration on the road and causing accidents. The density of vehicle movements can also cause the gathering of pollutants from the exhaust of vehicles in the city area. The density of vehicular movement occurs when people have the same destination. In addition, the lack of a systematic traffic route that lead to conflict between pedestrians and motor vehicles, and between vehicles and the vehicle itself could also cause congestion to happen.

Annual report (2013) by Tom Tom stated 10 most congested cities facing a congestion in peak hours. Peak hour congestion is generally of most public policy concern than all day congestion. This happens because of the concentration of work trips in relatively short periods of time. Work trips are by no means the majority of trips, but it can be argued that they cause the most congestion. Many cities have relatively less off-peak traffic congestion.
Figure 1.1: The statistical of 10 worst Cities for Traffic Congestion in 2013.

Figure 1.1 shows the worst globally cities facing traffic congestion every day. The Moscow city spends more 120% extra time required for travel due to traffic congestion. For Brussels city, extra time required for travel is more than 60% . This show the level of traffic congestion happen globally were high.

In Malaysia, Kuala Lumpur is the first cities ranking the worst traffic congestion every day. In 2015 the denizens of Kuala Lumpur spend between 270 million to 500 million hours being stuck in traffic annually, which translates to RM 5.51 billion in productivity lost per annum. Penang and Johor have also undergone rapid development and traffic congestion is increasingly becoming a big issue in this city (Smart Cities- Chapter 4, 2016).