

**PROBLEMS AND IMPLICATION IN WATER SUPPLY MANAGEMENT  
SYSTEM IN KEDAH**

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## بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

"In the name of God, most Gracious, most Compassionate".

To my beloved mother, Puan Enson Binti Othman; my wife, Wan Nur Haneem Wan Hasan and my children Sufea Medina & Adam Mecca who have been able to tolerate the weekends I was away from them. They were the pillar of strength for me to come out with this study. May Allah bless them.

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## ABSTRACT

Water supply has become a major issue in Malaysia recently. The crisis is not about the availability of water sources to supply our needs, but it is about the inefficiency in managing a water supply system that has a deleterious impact on the end consumers. This water crisis is a major problem faced by both the government and the people who are not provided with continuous and good quality water supply. In Kedah, the water sector has been privatized since January 2010 to ensure an efficient water supply management system. After five years of being privatized, the present water authorities do not seem to have contributed that much when compared to the previous management. However, Kedah is currently not facing any issues in terms of water resources due to adequate catchment area but this can quickly change especially given the current mismanagement of the state's water supply. The aim of this study is to evaluate common problems and strategies in order to improve water supply system in Kedah. The study evaluate key problems that affects the efficiency of water supply. This study also develop potential strategies on how to improve the efficiency of the water supply. Data from expert panel interviews and questionnaires survey from various parties were used in this study. The result of this study indicates that insufficient water treatments plants, low pressure and incompetent water management have all contributed to making water management a major issue in Kedah. Therefore water authorities need to give priority on solving these issues in order to make the water supply system more efficient to ensure continual supply of adequate fresh water needed for the state of Kedah.

## ABSTRAK

Bekalan air bersih sering kali menjadi masalah utama di Malaysia ketika ini. Masalah utama yang dihadapi bukanlah disebabkan oleh ketidakcukupan sumber air mentah tetapi ianya disebabkan oleh pengurusan air yang tidak cekap oleh pihak yang bertanggungjawab. Masalah utama yang sering dihadapi oleh pengguna adalah kegagalan pihak berkuasa air dalam menyalurkan bekalan air secara konsisten serta kualiti yang menepati piawai yang telah ditetapkan oleh pihak Kementerian. Untuk makluman sistem bekalan air di negeri Kedah telah diswastakan pada Januari 2010 bertujuan untuk menguruskan sistem bekalan air dengan lebih efisien. Namun setelah lima tahun penswastakan berlalu, ianya tidak memberi impak besar terhadap sistem bekalan air di negeri ini berbanding sistem pengurusan terdahulu. Matlamat kajian ini adalah untuk mengenalpasti punca utama yang menyebabkan masalah bekalan air di negeri Kedah dan langkah-langkah yang dapat diambil dalam mengatasi isu tersebut. Temubual dengan beberapa pakar di dalam sektor air di negeri Kedah dan juga kaji selidik terhadap responden yang terlibat secara langsung dalam pengurusan sistem bekalan air dijalankan dalam memperolehi data untuk dianalisa. Kekurangan loji rawatan air, tekanan rendah dan kurangnya tenaga pakar antara punca utama terhadap permasalahan ini. Untuk itu pihak bertanggungjawab perlu mengambil langkah-langkah penyelesaian segera dalam memastikan bekalan air di Negeri Kedah lebih efisien dan memastikan bekalan air dapat disalurkan secara berterusan.

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## LIST OF ABBREVIATIONS

AC Pipe	Asbestos Cement Pipe
CMR	Construction Management Research
NRW	Non-Revenue Water
MLD	Million Litre per Day
PAAB	Pengurusan Aset Air Berhad
RII	Relative Importance Index
SAJ	Syarikat Air Johor
SPAN	Suruhanjaya Perkhidmatan Air Negara
SADA	Syarikat Air Darul Aman
WTPs	Water Treatment Plants

## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 Introduction**

Managing water supplies and ensuring the availability of clean and potable water has become a worldwide issue. Every year, many conferences, seminars and workshops were held around the world to discuss towards better water supply management system. Report by UN stated that by 2050, global water demand is projected to increase by 55%, mainly due to growing demands from manufacturing, thermal electricity generation and domestic use (United Nation, 2015). Water is not only essential for human survival but it is also critical for industries such as agriculture and technology manufacturing. As water scarcity becomes a more pressing issue. Many parties are looking for effective ways to reduce water consumption (Rodriguez, 2014).

Malaysia receives abundant rainfall averaging 3,000mm annually that contributes to an estimated annual water resource of some 900 billion cubic meters. About 97% of our raw water supply for agricultural, domestic and industrial needs are derived from surface water sources primarily rivers. Malaysia has 189 river basins - 89 in Peninsular Malaysia, 78 in Sabah and 22 in Sarawak (WWF, 2012).

Therefore Malaysia should not have a crisis regarding water resources. However, the water supply system situation for some parts of the country changed to national crisis if this problem are not been well addressed from now. The growth in population and expansion in urbanization and industrialization are imposing growing demands that effect capacity of water treatment production, water supply pressure, expansion of pipe reticulation besides sustaining water quality standard.

Currently, all water authorities in peninsular Malaysia had been privatized. With full privatization of the water sector it becomes the main thrusts of the government's long terms objective of achieving greater effectiveness and cost reduction. Management of water supply system needs technical and engineering knowledge upgrade to perform good services to consumer and it must start from its finding water resources until satisfaction supply to the public.

In 11<sup>th</sup> Malaysia Plan, government also focus about transforming the rural water supply programme toward supply clean and treated water directly to each household expand and this involve connecting households to the meter stands of the reticulation systems. In addition, alternative systems such as gravity feed, tube wells and rain water harvesting be used in remote and isolated areas. 99% coverage of access of clean and treated water be provided to rural houses reaching 90,000 additional houses (11<sup>th</sup> Malaysia Plan).

Despite problems faced by water sectors, including water supply and water treatment none can be as pervading in determining the success or failure of water management in a country than governance (Chan, 2001). Hence, if a country has bad water governance, its water supply management system would not be managed sustainably.



## **1.2 Problem Statement**

Kedah is a northern state in Malaysia Peninsular which encountered many problems in water supply management. Even the state or federal government invest a lot of money to implement the water supply project in Kedah, the problem in delivering clean water to the user still cannot be resolved. There are a lot of complaints by consumer through newspaper which highlighted about their dissatisfaction towards services provided by state water authorities. The significant of this study is to look at the key problems and proposed potential strategies to overcome the problems. Report from Suruhanjaya Perkhidmatan Air Negara (SPAN) stated that Kedah water authority which is Syarikat Air Darul Aman (SADA) operate all the WTPs under over capacity (SPAN, 2013). This is not a single problem that faced by Kedah water authorities but the problem also appear through all the water supply process.

- i. Inadequate amount of clean water produced by water treatment plants
- ii. Insufficient water distribution coverage
- iii. Low quality potable water due to water drinking standard by Ministry of Health
- iv. Improper water supply management system

## **1.3 Aim and Objectives of The Study**

The aim of this study is to evaluate common problems and strategy to improve water supply system in Kedah. To attain this aim, the following objectives are pursued:

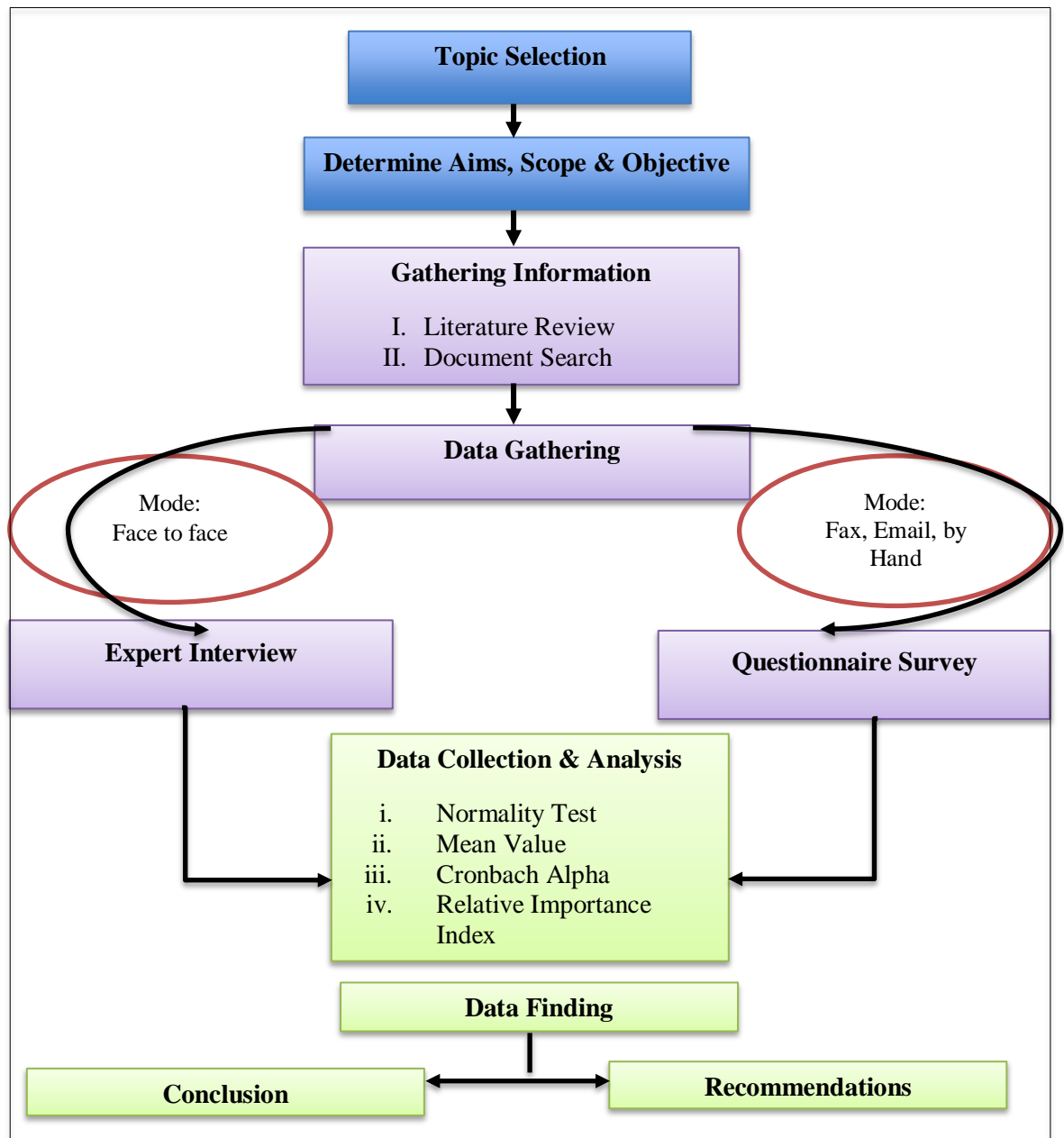
- i. To identify key problems that effect efficient water supply system in Kedah.
- ii. To evaluate implications of this problems towards efficient water supply in Kedah.
- iii. To evaluate potential strategies in improving efficiency to overcome problems of water supply system in Kedah.

#### **1.4 Scope and Limitation**

The focus of the study is to evaluate which area in Kedah that are mostly affected by water supply management system in Kedah. The scope of studies is to look into conceptual design and technical problem; management problem; quality problem; social impact and allocation in relationship to pursue the aim. Expert in water supply management system and individual from various water supply management background like consultants, contractors, SADA staff and client of the project becomes respondent for this study as they are also the consumers. This study also not focus too detail in calculation part whether from civil nor mechanical component.

## 1.5 Research Flow Chart

Figure 1.1 show the research flow chart in order to pursue aim and objectives for this study.



**Figure 1.1:** Research Flow Chart Diagram

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