PROSPECT OF SETTING UP A BOTTLED WATER PLANT AT MATANG.

By

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A Research Paper Submitted in Partial Fulfilment of the Requirement For the Degree of Corporate Master in Business Administration. Faculty of Economics and Business Universiti Malaysia Sarawak.

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I certify that I have supervised and read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a research paper for the degree of Corporate Master in Business and Administration.

Prof. Dr. Osman Rani Hassan
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This research paper was submitted to the Faculty of Economics and Business, UNIMAS and is accepted as partial fulfilment of the requirements for the degree of Corporate Master in Business and Administration.

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I hereby declare that this research is the result of my own investigations, except where otherwise stated. Other sources are acknowledged by footnotes giving explicit references and a bibliography is appended.

Signature : 
Date : 31st December 2001

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ASTM - American Standards for Testing and Materials
AWWA - American Water Works Association
BEM - Board of Engineers, Malaysia
CAC - Codex Alimentarius Commission
CAS - Codex Alimentarius Standard
CDC - Centre for Disease Control
C.F.R. - Code of Federal Regulations
CIDB - Construction Industry Development Board
CIF - Cost, Insurance and Freight
CMBA - Corporate Masters in Business Administration
CWT - Clear Water Tank
EMS - Environmental Management System
FCQ - Food Control Quality
FFDCA or the Act - Federal Food, Drug and Cosmetic Act
FOB - Free on Board
FR 1985 - Food Regulations 1983
GDP – Gross Domestic Product
GMPs - General Good Manufacturing Practices
IBWA - International Bottled Water Association
IEM - Institution of Engineers, Malaysia
IRR – Internal rate of Return
ISO - International Standards Organization
IWEM - Institution of Water and Environmental Management
KLSE - Kuala Lumpur Stock Exchange
KWG - Kuching Water Board
Lps - Liters per second
MCL - Maximum Contaminant Level
mg/l - Milligrams per liter
ml - Milliliters
ML - Megaliters
MLD or ML/d - Megaliters per day
MOH - Ministry of Health
MWA - Malaysian Water Association
NDWQSP - National Drinking Water Quality Surveillance Programme
NPV – Net Present Value
NSF - National Sanitation Foundation
NTUC - National Trades Union Congress
PET - Polyethylene terephthalate
ppb - Parts per billion
ppm - Parts per million

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Qty - Quantity (ies)
RM - Ringgit Malaysia
SDWA - Safe Drinking Water Act
SEDC - State Economic Development Enterprise
SPSS - The Statistical Package for the Social Sciences
TDS - Total Dissolved Solids
Unimas - University of Malaysia, Sarawak
USEPA - United States Environmental Protection Agency
USA - United States of America
USD - United States Dollar
U.S. FDA - U.S. Food and Drug Administration
UV - Ultra Violet
WHO - World Health Organization
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ABSTRACT.

This research project paper investigates into the possibility for the Kuching Water Board to produce bottled water at its Matang Treatment plant i.e. value-added production into bottled water instead of only treated water. It touches on why the production of bottled water makes managerial and economic sense due to a continual demand for bottled water nationally and worldwide. The methods used are straight-forward, using comparative stages of economic development and consumption pattern between countries. The results reveal a positive prospect for bottled water production locally. The primary study reveals a strong bottled water market using information gathered from a primary survey and questionnaire. The results gathered are then utilised for the estimated production rate of bottled water based technically on specifications and the calculated estimated demand of the local bottled market. The research paper ends with a financial calculation of the proposed expansion of Matang Treatment plant to show its positive viability.
ABSTRAK.

1.0 INTRODUCTION.

Kuching Water Board (KWB) has two existing water treatment plants i.e. the Batu Kitang and Matang plants, supplying treated water to consumers within its area of jurisdiction. The two plants are different in size and tap different sources of raw water. The Matang plant processes upland water whereas the Batu Kitang plant processes lowland water. It is proposed in this project research paper that the Board maximises the use of its existing Matang raw water sources by branching into value-added production of bottled water for sale.\(^1\) This does not imply that the Board stops producing treated water for the public at Matang.

The specific objectives of this research project paper are:

- to obtain a clear picture of the feasibility for the Board to produce bottled water at its Matang treatment plant through secondary and primary research;
- to gain a better understanding of the Board’s water quality at Matang and provide comparison against the water quality at Batu Kitang. The related controversial issues regarding public water supply are studied and capitalised upon in this proposed bottled water project;
- to show that there is a market for bottled water despite having a treated water supply in Sarawak;
- to identify the key factors which might affect the consumers receptiveness to this proposal. (These factors are then analysed together with the Board’s internal capabilities to select the type of bottled water which might have a potential market);
- to identify the potential market for the KWB bottled water in general;
- to provide in-depth analyses regarding consumers’ preference(s) and knowledge of Board’s raw water sources;
- to identify the technology required for treating the water for bottled water production
- to evaluate the financial viability of the research proposal.

The bottled water industry is a growing industry and this in turn has affected the public’s consumption pattern of treated water.\(^2\) Whether there is or will be a tendency for consumers to shift to drinking bottled water in preference to boiled tap water in Kuching is an interesting issue which will be investigated and revealed.\(^3\) If such
a shift does occur, the growing bottled water industry may gradually erode into the bottom line of the Board’s revenue. Good data regarding percentage usage of treated water can provide valuable insight(s) as to the appropriate strategy(ies) the Board can take advantage of to prevent such a decline.

In this respect, what are the prevailing issues at Matang that support the bottled water proposal? What is the existing market for bottled water in Kuching? Sarawak? Worldwide? What is the public’s perception towards this new bottled water venture? Will the public be receptive to this idea? Are the public satisfied with existing water being supplied through their taps by the KWB? Is the buying of bottled water a trend that is likely to continue? What type of bottled water should the Board produce? All these questions and more will be dealt with in this research topic. Relationships among all these questions, highlighting the purpose and form which can be utilised for the Board’s benefit will be explored in turn. The research project paper presented here represents the final effort and detailed write-up in accordance with the theme proposed in the first research project proposal submitted in early 2000.

1.1 Background Study and Preface.

Water is man’s second most valued resource, next to the air we breathe. Water is essential for continued life existence. Water is one of the products of Mother Nature’s hydrological cycle which is constantly being recycled. Water has strategic values and if naturally available in abundance and in good quality should be stored and tapped for commercial use. The better quality raw water sources when naturally occurring and purer, being less polluted, should command a higher premium if sold. The former statement and the classic phrase “It smells so fresh after a heavy rain” is a true statement, applicable in this context of the better raw water quality available at Matang.4

1.2 Objectives of the Study.

This research project paper is of value to the Sarawak State Government which is the main shareholder of Kuching Water Board, the State Economic Development Enterprise (SEDC), Kuching Water Board (KWB) and other interested private parties because:
there is currently limited data on local consumers’ preference on the type of raw water they may want to see bottled, and hence buy;

- the data gathered will assist in planning the type of bottled water to be produced by the Board;
- this study will complement the Board’s treated water production and enhance the Board’s position as a supplier of water;
- the data gained will provide an insight into the current reputation and trust of consumers of the Board. As the Board is a statutory body, a careful statistical investigation into the social and prevailing views of the Board’s consumers regarding bottled water and current treated water supply must also be looked into.

This research project paper will attempt to provide the best information to enable the part diversification of Kuching Water Board’s Matang treatment plant into the proposed bottled water venture. Fresh investment and capital works into a new plastic bottling plant will be required to bottle the cleaner raw water source at Matang for sale locally and perhaps even to the international market.

1.3 Significance of the Study and Limitations.

This exploratory paper was written in partial fulfilment of the Unimas CMBA course and to benefit the main sponsors of the researcher, i.e. the Sarawak State Government, to look into the broader perspective of the current water supply industry. The proposal represents an attempt to generate additional income for the Board and the mentioned sponsors.

This research project paper is limited in scope due to the complicated and interlinking factors in the water industry, ranging from varied geographical and human factors, attitudes and behaviours of consumption of bottled water. Although the main focus of the research project paper is on feasibility, the world of business, technology and markets are also important areas to delve into, to make the dollars and cent of the project. In other words, the project has to be as technically feasible within the Board’s resources as well as manageable by the current management so that minimum external costs will need to be added for the success of the project. However, due to constraints, the wider topic which can be developed for this research project paper, i.e. in-depth details on the technical aspect of processing and manufacturing of polyethylene terephthalate (PET).
plastic bottles used to bottle water such as plastic injection moulding, extrusion, blow moulding, preforms, injection moulding packaging, product development, customer relations, advertisement for promotion, marketing (Kotler, 1999) and legal requirements' will not be explored. This proposal also does not include market reviews, forecasts, sales targets, publicity campaigns, policies and plans which should be implemented at the later stages. Hence, business strategies (Johnson G. & Scholes K., 1997) will not be fully covered but only mentioned in brief.

1.4 Sources of Data and Methodology.

Sources of data are generally available from a wide range of sources. These include Kuching Water Board, Department of Statistics, Sarawak, Ministry of Health, Government Acts, Regulations and Ordinance, Kuching Water Board appointed consultants' reports, Spritzer prospectus, workshop papers, newspapers, books, magazines, conference papers, journals, websites on all articles relating to bottled water, international brands of bottled water, manufacturers of bottled water machinery, plastic bottle manufacturing, water treatment and tourism. The research project paper will initially define the bottled water concept to be expounded upon and the raw water source selected for the bottled water. Then, why the Matang treatment plant is suitable and the proposed treatment of the water to be bottled together with production quantities and cost will be discussed. This is followed later by a detailed survey of the many bottled water brands in Kuching, including a mention of famous bottled water brands available today.

The sources of data regarding the process of how to bottle the water by the Board itself, the expertise required and how they fit into the Board's current capital, land, manpower and resources will also be discussed. The paper will also look into why people buy bottled water, the current trends, the factors behind its booms and such like.

1.5 Organization of Chapters.

There are eight chapters in this research project paper including the chapter you are reading now. The chapters are arranged in numerical order for a continuous flow to facilitate easy understanding and reading. The research project paper is conceptually divided into four main sections. Chapters two to four open up the connecting topics on the related literature review. Chapters five
contains essentially the main research methodology consisting of four parts together with their respective findings (Analysis and Evaluations) of each portion. Chapter Six touches on the technology required for the development of the bottled water. Chapter Seven details the financial analyses necessary to show the viability of the bottled water venture at Matang Treatment plant.

The synopses of the next seven chapters are now presented.

Chapter Two.

This chapter touches on the literature review regarding classification of types of bottled water worldwide and in Malaysia. The scope of bottled water studied for this research paper project is narrowed to the type of bottled water targeted for production. The segmentation of the bottled water market in Malaysia is covered next, followed by a brief mention of international and local brands. International and local regulatory requirements for bottled water are also briefly described.

Chapter Three.

This chapter reviews why Matang Plant is the better plant to venture into the production of bottled water. It contains the micro literature review of Matang and KWB Matang Treatment plants, especially the current potential of Matang treatment plant to produce bottled water utilising existing Matang raw water sources. A simple selection criterion to determine the best raw water source for bottling among the three current Matang raw water sources is covered here. The materials for this literature review have been compiled from the Board’s Annual Reports Years 1960-1999.

Chapter Four.

Having covered the internal aspects for the development of bottled water, we now consider the reported growth potential for bottled water worldwide. Some views on bottled water using PET for bottling the water are also investigated. The literature review continues with possible reasons why people buy bottled water. This section taps prevailing researchers’ views on the possible reasons why people turn to bottled water instead of tap water. They are by no