UNIVERSITI TEKNOLOGI MARA

EFFECTIVE CONTENT MANAGEMENT AND DELIVERY METHODS USING OPEN ACCESS STRATEGY

MOHD ZAHID ISMAIL

Dissertation submitted for the Fulfillment of the Requirements for the Degree of Doctor of Philosophy

Faculty of Mechanical Engineering

April 2013
I declare that the work in this thesis/dissertation was carried out in accordance with the regulations of Universiti Teknologi MARA. It is original and is the result of my own work, unless otherwise indicated or acknowledged as referenced work. This thesis has not been submitted to any other academic institution or non-academic institution for any degree or qualification.

I, hereby, acknowledge that I have been supplied with the Academic Rules and Regulations for Post Graduate, Universiti Teknologi MARA, regulating the conduct of my study and research.

Name of Student : Mohd Zahid Ismail
Student I.D. No : 2009465916
Programme : Doctor of Philosophy
Faculty : Mechanical Engineering
Thesis/Dissertation : Effective Content Management And Delivery Methods Using Open Access Strategy
Title
Signature of Student : ...........................................
Date : April 2013
ABSTRACT

Existing content delivery strategies by incumbent service providers in Malaysia suppress new innovative value-added services as it eliminates opportunities for open partnership between network operators and third-party service providers. This creates a high barrier of entry of delivering new services that will substantially address the demand pull from wanting subscribers. This research examines elements of process innovation that contributes to improving broadband content delivery quality and addresses the demand pull for high quality contents by TV and broadband subscribers in Malaysia. Process innovation in the content delivery strategies impacting current business model of high speed broadband service delivery in Malaysia will be analyzed. This involves exploring contributing factors that affect the broadband and broadcast service providers’ Quality of Service (QoS) and the subscriber Quality of User Viewing Experience (QoE). This research analyzes the quality of the existing service delivery, reviewing the various content delivery methods and analyzing the Open Access network policies that advocates the participation of multiple service providers. This research also reviews the different types of multi-play services to subscribers which liberate them from proprietary contents and services. The cross section, ex post facto, formal empirical study involved interviewing 232 respondents whom are subscribers of the present broadband and broadcast service providers in the Klang Valley. The statistical analysis includes factor analysis, descriptive statistics, and frequencies, Cronbach Alpha Coefficient, Eigen values, Pearson’s correlation, t-test and One-way ANOVA tests and multiple regression using enter method. The main findings of the study are: Implementing Fiber to the Home network with Open Access Policy will substantially improve the subscribers Quality of viewing experience and the service providers’ quality of service delivery; successful Implementation of Open Access Policy in a high speed broadband environment in Malaysia requires incorporating a set of effective content delivery strategies and improving existing services by introducing elements of subscriber preference properties; these delivery strategies include incorporation of value-added services, content management and personalization and integrating current services into the open system environment and quality of existing services includes incorporating subscriber preference level of current services. The research study is concluded by listing known limitations and recommending future research.
ACKNOWLEDGEMENTS

I would like to express my utmost appreciation and gratitude to all parties whom have assisted me through the duration of my research. This includes:

1. The respondents who participated in this study; their cooperation in participating in the survey is highly appreciated.

2. This work have been greatly supported, encouraged, guided and inspired by my supervisor, Prof Dr. Hj Razmi Chik and co-supervisor Prof Dr Mohammad Said Zainol. Their constant feedback, advice and editorial comments are instrumental in the development of this report.

3. All the enumerators that assisted in the survey process and the compilation of the survey database: Delaram Kheyri, Alex Leng, Natasha Anuar and Rajini. Their commitment and hard work alleviated the burden in collecting valuable information.

4. All the research assistants that contribute to the statistical processing: Muna Azzudin and Umar Aditiawan. Their input is profoundly invaluable upon which most of the methodologies and quantitative approaches in this report are based on our series of joint research and analysis.

5. My family, especially my wife and children for their support, patience and encouragement to me for the completion of my thesis.

Finally I am most grateful to my creator Allah swt for providing me with every single ounce of energy and determination; granting me with ideas and inspiration to complete this research. Without him, I can do nothing.
TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION</th>
<th>PAGE</th>
</tr>
</thead>
<tbody>
<tr>
<td>AUTHOR'S DECLARATION</td>
<td>ii</td>
</tr>
<tr>
<td>ABSTRACT</td>
<td>iii</td>
</tr>
<tr>
<td>ACKNOWLEDGEMENTS</td>
<td>iv</td>
</tr>
<tr>
<td>TABLE OF CONTENTS</td>
<td>v</td>
</tr>
<tr>
<td>LIST OF TABLES</td>
<td>ix</td>
</tr>
<tr>
<td>LIST OF FIGURES</td>
<td>xi</td>
</tr>
<tr>
<td>LIST OF ABBREVIATIONS</td>
<td>xii</td>
</tr>
</tbody>
</table>

CHAPTER ONE : INTRODUCTION

1. Introduction 1
1.1. Process Innovation and Demand Market Pull 2
1.2. Background of the Study 4
1.3. Technology Push and Demand Pull Issues 7
1.4. Research Problem 9
1.5. Purpose of the Study 14
1.6. Defining Constructs 16
1.7. Research Questions 19
1.8. Research Aims and Objectives 20
1.9. Propositions 21
1.10. Research Method 27
1.11. Assumption of the Study 28

CHAPTER TWO : LITERATURE REVIEW

2.1. Introduction 30
2.2. Malaysian Broadband Service Delivery Overview 30
   2.2.1. Access Network Technologies 31
   2.2.1.1. Passive Optical Network (PON) 31