

**UNIVERSITI TEKNOLOGI MARA**

**TECHNOLOGICAL SUPPORTED  
PLATFORM FOR THE PUBLIC  
TRANSPORT TICKETING SYSTEM**

**AHMAD FADHLE SHAH B. ABD HAKIM**

Computing Project submitted in partial fulfillment  
of the requirements for the degree of  
**Master of Science in Information Technology**

**Faculty of Computer and Mathematical Sciences**

July 2017

## ABSTRACT

Public transport is one of the features that are usually provided by the government or the private sector to be used by the public. It consists of a variety of modes such as bus, taxi, monorail, train and others. It has become an important base of a country, especially in developed countries. Developed countries are more concern of these facilities to control the traffic congestion in the area as stated in many literatures. Moreover, the high cost of living today is also one of the factors most countries give priority to the provision of public transport in their countries. It is one way to reduce their citizen burden by providing the alternative facilities for them. However, it is not an easy task to provide a good public transport service to public. This research focused on one of the main public transport player in Malaysia which is known as Organization X in this report. This organization is the pioneer and the most experience players in train transportation in Malaysia. In the research, the author investigated the issue of the current ticketing system in Organization X. Then, the author describes the new proposed ticketing system as a solution to the issues by mapping the appropriate technology platform in the solution. All the data and information collected through the expert engineer's interview from the previous successful project in order to further strengthen the chosen solution. The significance of the research is to provide the best technological platform solution to the public transport player in managing the ticketing system issue. Besides that, the proposed technologies of the ticketing system's in this research can be used as a guideline and baseline information for others public transport operator to know about the available technology in the ticketing system nowadays.

## ACKNOWLEDGEMENT

First and foremost, the deepest gratitude of all shall be bestowed to Allah the Almighty and The Merciful for all the insight which He gave to us that lead to the completion of this research. Without His blessings and consent, I might not have enough courage and determination to complete this research. All my thanks and appreciation will be laid upon Him.

I would like to express my deepest appreciation to all those who provided me the possibility to complete this report. A special gratitude I give to my supervisor, Associate Prof Dr. Haryani bt Haron, whose contribution in stimulating suggestions and encouragement, helped me to coordinate my project and ideas given in order to complete this report.

Not forgetting very special thanks to all participants and all the lecturers, friends also colleagues of Master Science (Information Technology) for their support and encouragement during the process of completing this research.

Nevertheless, I would like to express my special gratitude and thanks to my parents, Hj. Abd Hakim B. Hj Ngah and Hjh. Khadijah Bt. Muda, and also my families for all support and courage towards my success. Without their personal sacrifices and being a constant source for encouragement, especially in the final stages, this thesis would not have been possible.

Thank you, may ALLAH bless all of you.

# TABLE OF CONTENTS

<b>AUTHOR'S DECLARATION</b>	i
<b>ABSTRACT</b>	ii
<b>ACKNOWLEDGEMENT</b>	iii
<b>TABLE OF CONTENTS</b>	iv
<b>LIST OF TABLES</b>	viii
<b>LIST OF FIGURES</b>	viii
<b>CHAPTER ONE: INTRODUCTION</b>	1
1.1 Research Background	1
1.2 Problem Statement	2
1.3 Research Questions	3
1.4 Research Objectives	3
1.5 Research Scope	3
1.6 Research Significance	4
1.7 Organization of Research Report	4
<b>CHAPTER TWO: LITERATURE REVIEW</b>	6
2.1 Introduction	6
2.2 Issues in the Public Transport Services	8
2.2.1 Long Waiting Time	8
2.2.2 Punctuality	8
2.2.3 Ticketing System	9
2.2.4 Delay Time	9
2.2.5 Frequency of Transport Service	10
2.3 Technologies in Ticketing Systems	10
2.4 User Satisfaction in Public Transport Services	12
2.5 Conceptual Framework	14
2.5.1 Accessibility	14
2.5.2 Ease of Use	15

2.5.3 Multiuser	15
2.5.4 Ability to Track History	15
2.5.5 Immutable History	16
2.5.6 Flexible Views	16
2.5.7 Access Control	16
2.5.8 Dependency Management	16
2.5.9 Notifications	17
2.5.10 Customizable Workflow	17
<b>CHAPTER THREE: METHODOLOGY</b>	<b>18</b>
3.1 Introduction	18
3.2 Research Paradigm and Approach	18
3.2.1 Qualitative Research Approach	18
3.3 Research Design	19
3.3.1 Eagle Table	19
3.3.2 Research Operational Framework	19
<b>CHAPTER FOUR: RESULTS AND FINDINGS</b>	<b>23</b>
4.1 Introduction	23
4.2 Case Site	23
4.3 Data Collection	24
4.3.1 Selection of Participants	24
4.4 Issues in Current Ticketing System	27
4.4.1 Manual Ticketing System	27
4.4.2 No Integration System	28
4.4.3 Limited Counter Accessibility and Operation Hours	29
4.4.4 Bad Crowd Congestion	29
4.4.5 Long Waiting Time	29
4.4.6 Manual Verification and Authentication Process	30
4.4.7 Fraud and Sneak Case	30
4.4.8 Manual Reporting Process	30
4.4.9 Tends to Human Error	31