CONSUMER ACCEPTANCE OF INNOVATIVE
TOLL ROAD SERVICES:
MULTI LANE FREE FLOW (MLFF) SYSTEM IN
MALAYSIA

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I hereby acknowledge that this project paper has been accepted as part fulfilment for the degree of Bachelor of Technology Management (Technology Innovation) with Honours (BTMI)

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I declare that this project is the result of my own research except as cited in the references. The research project has not been for any degree and it is not concurrently submitted in the candidature of any other degree.

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DEDICATION

This research paper is lovingly dedicated to my parents, En. Abdullah bin Daud and Puan Zaini binti Mustafa, who have been my constant source of inspiration, they have given unconditional support with my studies. I am honoured to have their as my parents. Thank you for giving me a chance to prove and improve myself through all my walk of life. To all my family thank you for believing me for allowing me to further my studies. Lastly to my loved one, Ahmad Ridwan bin Hassim, thank you for your understanding and unconditional support to me. Thank you very much.

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ABSTRACT

The aim of this research is to determine consumer acceptance of MLFF in Malaysia, explain possibility of implementation of MLFF in Malaysia and explain the MLFF as an innovative solution to reduce congestion. The theoretical framework of this study is based on the Unified Theory of Acceptance and Use of Technology (UTAUT). It measures the consumer acceptance based on these element that is performance expectancy, effort expectancy, social influence and facilitating condition. This research conducted by quantitative method to identify the consumer acceptance of innovative services which is MLFF in Malaysia through survey research strategy that is questionnaire. The questionnaire was distribute among toll user at toll plaza Ayer Keroh, Melaka.

Key words: Multi Lane Free Flow, consumer acceptance, innovation solution

ABSTRAK

Tujuan kajian ini adalah untuk menentukan penerimaan pengguna daripada MLFF di Malaysia, menjelaskan kemungkinan pelaksanaan MLFF di Malaysia dan menjelaskan MLFF sebagai penyelesaian inovatif untuk mengurangkan kesesakan. Rangka kerja teori kajian ini adalah berdasarkan kepada Teori Bersepadu Penerimaan dan Penggunaan Teknologi (UTAUT). Ia mengukur penerimaan pengguna berdasarkan elemen ini iaitu jangka prestasi, jangka usaha, pengaruh sosial dan keadaan memudahkan. Kajian ini dijalankan dengan menggunakan kaedah kuantitatif untuk mengenal pasti penerimaan pengguna bagi perkhidmatan yang inovatif iaitu MLFF di Malaysia melalui strategi penyelidikan kajian iaitu soal selidik. Soal selidik adalah diagihkan di kalangan pengguna tol di Plaza Tol Ayer Keroh, Melaka.

Kata kunci: Multi Lane Aliran Percuma, penerimaan pengguna, penyelesaian inovasi

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LIST OF SYMBOLS

Sig.	=	Significance		
N	=	Number of sample		
%	=	Percentage		
R	=	Correlation coefficient		
t	=	t-test		
β	=	Beta		
f	=	Frequency		

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CHAPTER 1

1.0 INTRODUCTION

Introduction

This chapter is about the introduction of the research. This introduction is very important for the success of research that uses the iron triangle. There is the background of the study, problem statement, research questions, research objective, scope, limitation, key assumption and importance of the study in this research.

1.1 Background of Study

In daily life in Malaysia all of road users can see the toll gate. Others countries applying the MLFF system by using the tags that installed on the windshields of vehicles, in which information is embedded in the tags read by the reader of the MLFF system. The most obvious advantage through this technological innovation is an opportunity to eliminate congestion at toll plazas, especially during the Eid Holiday when traffic tends to be heavier than usual. In addition, the MLFF system create customer acceptability as a result of the reduction in queuing time during toll plaza because no toll charges by exchanged hands. Apart from the obvious advantages, the use of MLFF system can also benefit in terms of the PLUS Malaysia can reduce cost, especially the cost to pay employee salaries. Thus, the MLFF system is a win-win

situation for both the car users and toll operators, which is why it is now being used extensively throughout the world.

PLUS Malaysia uses two toll collection systems for the Expressways, an "open" system and a "closed" system. Both of these systems are commonly used within the toll road industry. Open System are no transit ticket/card is issued. However, the user is required to pay for toll upon passing through a toll plaza. The toll fare is based on the Vehicle Class. Closed System requires the user to 'touch-in' or collect a transit ticket/card upon entering the highway and 'touch-out' or return the transit ticket/card upon exit. The toll rate is based on the Vehicle Class and distance travelled (PLUS Malaysia Berhad, 2014).

In a closed system, all drivers have to take a ticket at the entrance plaza, and settle in the plaza out. Rates are based on distance travelled. If tickets are lost or damaged, usually a maximum fee will be charged. This system is suitable for intercity highways. In an open system, toll plaza placed at strategic points and all vehicles through which charged a fixed fee. While saving money from not having to build toll plazas that much, it may cause trouble, and the driver may be able to avoid it. This is because they can get in and out of the way at any intersection. This system is suitable for use on the road around the city, bridges and tunnels (Toll, 2013).

1.2 Problem Statement

Currently, Malaysia has become one of the busiest highways in Asia (Nordin, 2011). The busiest highways are caused by the increasing number of vehicles, especially in big cities. This situation will become more crowded when the arrival time of the peak time and the Eid Holiday. Most of the toll users using cash payment, but it take a longer time because the toll gate need to return the money, especially coins. For Touch N Go, it's easier than cash payment because users do not have to queue in line to pay the toll. But Touch N Go also takes a long time, even faster than a cash payment. Smart TAG can be described as the best way to conduct a transaction, but a tool for Smart TAG is expensive. Touch N Go and Smart TAG may either a problem in terms

of safety, if the card is lost or scratched, toll users cannot use the application. Therefore, to overcome this problem, the government of Malaysia has introduced a new system to facilitate the management to collect the toll. This system is called a MLFF and this system is still in experimental.

1.3 Research Questions

i. Is there any significant correlation between the performance expectancy with consumer acceptance?
ii. Is there any significant correlation between the effort expectancy with consumer acceptance?
iii. Is there any significant correlation between the social influences with consumer acceptance?
iv. Is there any significant correlation between the facilitating conditions with consumer acceptance?

1.4 Research Objectives

i. To determine the significant correlation between the performance expectancy with consumer acceptance.
ii. To determine the significant correlation between the effort expectancy with consumer acceptance.
iii. To determine the significant correlation between the social influence with consumer acceptance.
iv. To determine the significant correlation between the facilitating conditions with consumer acceptance.

1.5 Hypothesis

There are a few hypothesis on this study that is:

Hypothesis 1

H_0:   Performance expectancy will not affect consumer acceptance.

H_1:   Performance expectancy will positively affect consumer acceptance.

Hypothesis 2

H_0:   Effort expectancy will not affect consumer acceptance.

H_2:   Effort expectancy will positively affect consumer acceptance.

Hypothesis 3

H_0:   Social influence will not affect consumer acceptance.

H_3:   Social influence will positively affect consumer acceptance.

Hypothesis 4

H_0:   Facilitating conditions will not affect consumer acceptance.

H_4:   Facilitating conditions will positively affect consumer acceptance.

1.6 Scope, Limitation and Key Assumption of the Study

1.6.1   Scope of the Study

The scope of this study is to analyses the problem of traffic congestion at Malaysia Highway. The researcher conducted a study about the MLFF system to replace the Touch n Go and Smart TAG. The questionnaire for this study is distribute

for all toll usage data collection in Melaka to determine consumer acceptance MLFF system if done in Malaysia.

1.6.2 Limitation of the Study

In this research, the researcher found some limitations that need to be faced in conducting this study. First, the researcher only study more on detailed about the MLFF system but not a previous system. Second, the research area was limited to plaza toll Ayer Keroh, Melaka. Lastly, the questionnaire will distribute to toll user only.

1.6.3 Key Assumption of the Study

An organization must use the best technologies to produce quality services and expertise in troubleshooting toll users in Malaysia. The organization and toll user will get the benefit if achieves the goals with the best service. The organization must improve their system by apply the MLFF system for increase their services.

1.7 Importance of the Study

MLFF system is very important in the development of the country, particularly in the area of highway. This study proposes innovative solution and its can help to reduce the existing problems in Malaysia such as traffic congestion. This study can also help the next researcher to make this study as a reference.

CHAPTER 2

2.0 LITERATURE REVIEW

Introduction

The purpose of this chapter is to study about the theory that related with this research. Schilling (2013) comments that innovation is the practical implementation of an idea into a new device or process. In the context of the MLFF system, innovation may be linked to changes in efficiency, productivity, quality, low cost and safety. Research has been called to understand why the MLFF system should be implement in Malaysia and the impact of this innovation towards consumer acceptance.

2.1 Correlation between variable

2.1.1 Performance Expectancy

According to Venkatesh, Thong and Xu, (2012), performance expectancy is the degree to which using a technology will provide benefits to consumers in performing certain activities. Performance expectancy is the degree to which an individual believes that using the system will help him or her to attain gains in job performance. Performance expectancy in the UTAUT model is derives from a combination of five similar constructs, including perceived usefulness, extrinsic motivation, job fit, relative advantage and outcome expectations performance

expectancy is the strongest predictor of intention within each of the individual models reviewed and was found significant at all points both voluntary and mandatory setting in Venkatesh et el. (2003) model validation (Alshehri et al., 2012).

2.1.2   Effort Expectancy

Venkatesh, Thong and Xu, (2012) explain that effort expectancy is degree of ease associated with consumers' use of technology. Effort expectancy is also the degree of ease associated with use of the system. In the validation of the UTAUT, effort expectancy was significant in both voluntary and mandatory usage contexts, although only for the first period of usage. Since practice increase one's comfort with software, effort oriented construct would become logically, less salient after learning hurdles are overcome (Alshehri et al., 2012).

2.1.3   Social Influence

Social influence is the extent to which consumers perceive that important others (e.g., family and friends) believe they should use a particular technology (Venkatesh, Thong and Xu, 2012). According to Alshehri et al., (2012), social influence is the degree to which an individual perceives that is important others believe the respondent should use the new system. Social influence includes consideration of the person's perception of the opinion of others, respondent referent group's subjective culture and specific interpersonal agreements with others, as well as the degree to which use of an innovation is perceived to enhance one's image or status in one's system (Venkatesh et al., 2013).

2.1.4   Facilitating Condition

According to Venkatesh, Thong and Xu, (2012), facilitating condition refer to consumers' perceptions of the resources and support available to perform a behaviour. Facilitating condition is the degree to which an individual believes that an organizational and technical infrastructure exist to support use of the system. Alshehri et al., (2012) explain that the facilitating condition represents organizational support and includes the constructs of perceived behavioural control, facilitating condition and compatibility from prior modes. Results from the UTAUT validation suggest that facilitating condition was significant in both voluntary and mandatory setting in the initial usage period but its influence on usage intentions disappeared after this.

2.1.5   Consumer Acceptance

A consumer is a person or group of people, such as a household, who are the final users of products or services. The consumer's use is final in the sense that the product is usually not improved by the use (Wikipedia, 2014).

Fast and O'Neill (2010) define acceptance is founded on effective relationships and cultivating and maintaining consent from beneficiaries, local authorities, belligerents and other stakeholders. This in turn is a means of reducing or removing potential threats in order to access vulnerable populations and undertake programme activities.

According to Naylor and Greco (2002), customer acceptance begins with clear, operational definitions from both the customer and the organization. Understanding the motivations, expectations and desires of both provide a foundation in how to provide best services to the customer by most businesses.

The acceptance of the clients could also be observed when they are willing to participate in anything that are related to the product or services offered (Norudin Mansor et. al., 2011). Customer acceptance on products or services offered is always

been associated with the familiarity and the degree of awareness and use of any given tool. The more people using them, the more valuable they become. Thus, the customer acceptance exists when there is such tendency to choose again the products or services offered (Holetzky, 2008).

According to Ammenwertha et al., (2014) user acceptance seems to reflect whether a system adequately fits the characteristics of the users (e.g. computer knowledge) and the characteristics of the task (e.g. report writing) which is to be performed. Thus, user acceptance can be seen as an adequate indicator whether an information system really supports users in their clinical working processes. When this support is the aim of an information system, then user acceptance can even be seen as an adequate indicator for the overall system's success.

2.2 Multi-Lane Free Flow (MLFF)

Malaysia highway authorities has been looking for an alternative such as Multi-Lane Free Flow (MLFF) ETC system. MLFF is a fully electronic tolling system which features an overhead gantry, with no lane barriers, to transact the user's toll charges accordingly (Aziz, 2011). Md. Salleh et al (2006) comments that Multi-Lane Free Flow (MLFF) system is an electronic tolling system used in many expressway networks worldwide. Currently, full electronic toll payment system is being extensively implemented in countries such as Australia, USA, Chile and Canada.

The Multi-Lane Free Flow (MLFF) is an electronic toll collection system that allows free flow high speed toll system highway for all its users. With MLFF, the current toll lanes at toll plazas will be replaced with readers at gantry across the highway to detect vehicle and deduct toll using the existing Electronic Toll Collection (ETC) when fully implemented. The Malaysian Highway Authority (MHA) is planning to implement MLFF system at all highways in stages starting 2010 (Multi-lane free flow, 2014).