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Bangkok's mass rapid transit system's commuter decision-making process in using integrated smartcards

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ABSTRACT

This paper studied the decision-making process to use an integrated smartcard ticketing system by Bangkok metropolitan transit commuters. A second-order Confirmatory Factor Analysis using LISREL 9.10 was undertaken on Bangkok commuter's decision-making process on the use of an integrated smartcard system. The sample consisted of 300 Bangkok commuters obtained by accidental sampling using questionnaires with a 5-point Likert scale. The tools in the research questionnaires used scale estimation that achieved a confidence value of 0.84. The research instruments used rating scales measuring information search, alternative choices, and use decision on the 15 variables in the decision-making process which had factor loadings between 0.49 and 0.89 weight elements when sorted in descending order and overall had a high level. Use decision, alternative choices and information search had a factor of 0.89, 0.65 and 0.49, respectively. There was a good fit of the decision-making model to the empirical data (chi-square = 34.55, probability (p) = 0.94, df = 49, RMSEA = 0.00, GFI = 0.98, AGFI = 0.96, SRMR = 0.04).
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Introduction

The most critical urban problems in Bangkok today probably evolve around transportation issues. Since 1967, the population of Thailand has more than doubled. In 1972, police records showed that there were about 243,000 cars in Bangkok (not including motorcycles), and the average speed achieved on a main road was about 23 km/h (Lo & Yeung, 1997). In 1990, the number of cars had increased to 1 million, with official statistics now stating that the total number of vehicles with Bangkok license plates has

reached 8.55 million—double the 4.28 million registered in 2004 (Bangkok Post, 2014).

The title of the 'world's worst commute' has been given to Bangkok, where people now spend on the average 2 h a day traveling to and from work (Express, 2014) while at peak times, the average speed of commuters using vehicles in and out of Bangkok is only 11 km/h. Therefore, the critical need for an efficient and effective mass rapid transit system is all too easy to see with government planners from the Bangkok Metropolitan Administration (BMA) setting an ambitious target to reduce the use of private cars in the city by 30 percent over the next 15 years and to encourage more motorists to turn to mass transit as an alternative mode of traveling (ThaiPBS, 2014). This appears to be working as only 1263 owners registered their vehicles each day in 2014 compared with 1954 vehicles a day in

2013 (Bangkok Post, 2014). In 2012, plans for a commuter-friendly Bangkok were laid out with officials promising a cheaper, more convenient and integrated ticketing system as early as 2015. The easiest and least expensive part of the government's plan was the introduction of a joint-ticketing system whereby commuters could gain access to all forms of mass transit — elevated trains, subway trains, buses and boats — by using a single ticket (Bangkok Post, 2012).

The intent of this research was therefore to study the linking strategies of an integrated smartcard ticketing system that would better serve Bangkok metropolitan area commuters as well as to provide information to agencies involved in marketing strategies concerning an integrated smartcard ticketing system for Bangkok's metropolitan commuter systems. A Structural Equation Model was employed to analyze the variables either directly or indirectly affecting Bangkok consumer use of an integrated smartcard ticketing system decision-making process.

Research by Kotler and Armstrong (2001) has become a pillar in discussions concerning consumer-buying decision processes. In earlier research, they described two types of factors that help in determining and encouraging the consumer purchase intention covering personal and stimulating factors. Later, they expanded the research and went on to discuss the stages and importance of the consumer process's dependence on the individual with the decision-making process being divided into five stages: Need Recognition, Information Search, Evaluation and Alternatives, Purchase Decision, and Post Purchase Behavior.

Installing trust between sellers and customers in an E-commerce environment is not easy. This is why it is necessary to understand several marketing models such as the types of buying decision behavior or the different characteristics affecting the customer behavior (Kotler & Armstrong, 2008).

Information Search on Decision-making

When a consumer buy a new good, they are waiting for some information about it. This information could be given directly by a seller in a shop store; however on a web site this practice is more complicated. Customers clearly can access certain information. However, if this information does not answer the questions raised, customers can feel confused. The more customers become confused about a product, the more they will need explanations and knowledge transfer in order to decrease consumer fear and perceived risk (Corbitt, Thanasankit, & Yi, 2003).

Consumers engage in both internal and external information searching (Perner, 2010). Internal searching involves the consumer identifying alternatives from memory. For certain low involvement products such as fast food restaurants, consumers must be able to retrieve a restaurant from memory before it will be considered. For high involvement products, consumers are more likely to use an external search. Before buying a car, for example, the consumer may ask friends' opinions, surf the Internet or visit several dealerships. Thus, firms that make products that are selected predominantly through external searching must invest in having information available to the consumer in need.

Kotler and Armstrong (2001) stated that among the consumer decision-making process, understanding consumers' sources of information for the product is crucial because it is the early phase of consumer behavior and it may influence the rest of the consumer decision-making process. Personal factors include consumer personality with respect to demand, incentive, attitude, access of information, and adaptability.

Consumer knowledge can often be obtained from the product vendors themselves. To obtain and then provide this information, by often implementing a 'smart card' collection system is a great advantage. In Bangkok's case a 'smart card' system across multiple mass transit networks could potentially provide information to both operators and consumers such as providing information search ability, consumer protection and consumer service in the following areas (Diyar, 2010).

They eliminate the need for transit system personnel handling tickets as they can be purchased from outside commercial vendors for long periods of time.

1. They can be re-filled, even further reducing system staff requirements.
2. They can obtain and store accurate information on ticket sales from all systems.
3. Smartcards can eliminate mistakes and theft in ticket collection procedures.
4. Distribution of tickets/cards to commuters occurs in a secure, safe, and efficient manner.
5. It is easy to generate powerful daily reports on ticket sales and system utilization such as load factors.
6. Decision-making process are improved. Organizations can make better decisions based on complete and full information on ticket sales at any point of time.
7. Better service can be provided to commuters and increase customer satisfaction.

Alternative Choices on Decision-making

Life is full of trade-offs. People must choose how to spend scarce money and time. The decisions they make reflect their options, needs, and preferences. Economists call these *demands*, which refers to the amount and type of goods people and businesses will consume under specific conditions (Litman, 2012).

According to Litman (2012), price changes can affect consumption in various ways. Transport activities tend to follow this pattern. When transport prices decline, mobility tends to increase, and if prices increase, mobility declines. Transport price changes can affect trip frequency, route, mode, destination, scheduling, vehicle type, parking location, and the type of service selected.

Use Decision in Decision-making

EMTA (European Metropolitan Transport Authorities) issued a report after studying the issue of electronic ticketing in Europe. Decision-making about fare levels varies from one city to another and generally is decided by