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路線移轉行為之影響

Analysis of Freeway Drivers' Enroute Switching  
Behavior under Various Traffic Information Scenarios

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# 不同交通資訊情境對高速公路駕駛人 路線移轉行為之影響

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## 摘 要

先進駕駛者資訊系統可藉由提供駕駛人即時交通資訊，以影響其路線移轉行為，進而改善路網績效和服務品質。然而，只有當駕駛人對交通資訊內容持正面態度時，先進駕駛者資訊系統才能真正發揮其應有的效益。因此，駕駛人對所接收即時交通資訊的觀點，將成為能否影響其改變路線移轉決策之關鍵因素。此外，提供何種交通資訊類型，才可有效影響駕駛人行駛中的路線移轉行為，亦為重要的考量因素。

惟過去探討即時交通資訊對駕駛人路線移轉行為的分析模式，較缺乏同時考量駕駛人對即時交通資訊與路線移轉之正負向潛在變數。駕駛人對即時交通資訊的認知、態度與偏好等潛在看法，也應作為改善資訊內容的重要參酌。因此，為深入釐清即時交通資訊對高速公路小汽車駕駛人路線移轉行為的影響，本研究以兩階段研究方式進行：首先採用結構方程模式衡量駕駛人內心潛在變數，確認影響路線移轉行為意向的正負向潛在變數；接著透過排序普羅比模式進一步確認影響駕駛人路線移轉行為的重要因素，分析不同交通資訊情境下之行為反應，並將正負向潛在變數納入路線移轉行為模式，以提升路線移轉行為模式的解釋能力。

本研究選擇高速公路北部區域進行案例研究，調查對象為行駛於高速公路基隆至新竹間的小汽車駕駛人，有效問卷回收 493 份。根據案例分析結果顯示，本研究推論的因果關係假設皆確立。駕駛人對即時交通資訊之「認知價值」和「使用態度」可正向刺激其路線移轉行為，至於「塞車容受力」及「路線移轉障礙」等負向潛在變數為牽制駕駛人改道行為意向的關鍵因素，致使駕駛人在面臨塞車時仍多半選擇維持原行駛路線；基於改善駕駛人資訊需求的觀點，藉由提供更詳實的替代路線資訊，可協助駕駛人評估改道決策，提高路線移轉行為產生率，達到擁擠管理的效果。

關鍵字：即時交通資訊、路線移轉行為、潛在變數、結構方程模式、排序普羅比模式

# **Analysis of Freeway Drivers' Enroute Switching Behavior under Various Traffic Information Scenarios**

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## **ABSTRACT**

Advanced Driver Information Systems (ADIS) have been considered to improve network performance and service quality by offering real-time traffic information to drivers for changing their enroute decisions. However, the benefits of ADIS are achieved only if the drivers respond to the real-time traffic information in a positive manner. Hence, the effectiveness of real-time traffic information greatly depends on the drivers' acceptance and compliance toward it. This is the critical factor for successful implementation of ADIS. Moreover, which types of real-time traffic information should be provided is also crucial to drivers' enroute switching behavior.

In the past, studies focusing on drivers' route switching behavior might not discuss the effects of drivers' viewpoints of real-time traffic information on positive and negative aspects simultaneously. Drivers' perceptions, attitudes, and preferences toward real-time traffic information should be taken into seriously consideration in the revision of information contents. To explore the effects of real-time traffic information on freeway drivers' enroute switching behavior, this study used two stage research methods. First, this paper applied "Structural Equation Modeling (SEM)" to verify the latent variables that would positively or negatively affect drivers' enroute switching intention and explore the causal effect between them. Then "Ordered Probit Model (OPM)" method was used to confirm whether latent variables and traffic information scenarios would affect drivers' stated enroute switching behavior in the congestion situation.

According to the case study, the research subjects were freeway drivers traveling between Keelung and Hsinchu City, and 493 valid questionnaires were collected. The results of SEM showed that all research hypotheses have been confirmed. Drivers' perceived value and usage attitude toward real-time traffic information had positive effects on their enroute switching intention. The drivers' enroute switching intentions were negatively impeded by the drivers' tolerance of congestion and perceived switching barriers. Therefore, it must be taken great consideration to provide more applicable route information contents in terms of drivers' opinions. The empirical results reveal that drivers' enroute switching behavior would be motivated by providing more detailed information on the alternative route. The improvement of the route information contents may help the traffic management agency to implement the strategies of congestion management.

**Keywords:** Real-time traffic information, Enroute switching behavior, Latent variables, Structural Equation Modeling (SEM), Ordered Probit Model (OPM)