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Bicycle sharing in Asia: a stakeholder perception and possible futures

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Abstract

Despite public bicycle sharing programs (PBSP) gaining global attention as important climate smart transport strategy to support sustainable, low carbon societies in European and North American cities, its uptake in Asia, except for China, has been unexpectedly limited. Moreover, while existing schemes in other regions could provide a better understanding about bicycle sharing, the need to improve our understanding of PBSP's role in catering for the local transportation mobility and accessibility needs and requirements as well as identifying strategies to make PBSP better adapted to local Asian condition is in order. To date, there has been limited information and analytics to inform low-carbon local planning especially from the perspective of variious individuals. To address this gap, this paper aims to advance our understanding of bike sharing schemes in Asia by examining motivators, constraints and opportunities, and their contribution towards achieving sustainable urban mobility outcomes. Using a survey-based research design approach, this study examines the perception of various individuals on the perceived benefits, and identify factors which have facilitated or constrained the implementation of PBSP. In essence, results show that technical constraints were perceived to be the most restrictive and dominant barriers while there is general consensus that different types of facilitators support bikeshare implementation; also, environmental benefits top the list of benefits while the lowest scorer is economic benefit, providing vital and important information to inform design, marketing and communication strategies for PBSP implementation within the Asian setting. This paper enhances our understanding of the challenges involved in bikeshare implementation as a first step in planning for a smarter society. It also attempts to build the evidence base to comprehend the localization of bike sharing schemes. Understanding how PBSP can be locally implemented can have long-term positive effects through creating a cycling culture and changing peoples' travel behaviors.

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Keywords: Active transport; Cycling; Sharing economy; Asian cities; Stakeholder analysis

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1. Introduction

Bicycle sharing is gaining global attention as an important climate smart transportation strategy to support sustainable cities. Public bicycle sharing programs or PBSP are low carbon alternatives that provide point-to-point mobility for short travels (Shaheen et al 2011; Midgely 2011). PBSP allocates a number of bicycles for shared individual use within a particular area, generally in relatively denser inner city areas. A person can take out a bicycle from one docking station for a short trip (usually taking between 30 and 60 minutes) and then return the bicycle to any other docking station, in lieu of using or complementing other transportation modes (e.g. car, public transit, taxicab and walking). Bicycle sharing business models vary depending on the operator, cost of usage, usage time allowance and operating times (Shu et al 2010).

Since its introduction, bicycle sharing bikes have been transformed to respond to the changing need and context. The evolution of bicycle sharing schemes can be categorized into four generations. Each generation is distinctly characterized by specific technical, technological or physical innovations. The first generation public bicycles started in Amsterdam in 1965. Known as "*white bikes*", these were white-painted bicycles offered to cyclists for public use. These bikes can be picked up at one of the stations, used to ride to their desired destinations, and left for the next user. However, "White Bikes" failed as bikes were thrown into canals or stolen. The first large-scale second generation bike-sharing program called "City Bikes" was implemented in Copenhagen, Denmark, with several improvements over the previous model. While more formalized than the previous generation, with stations and a nonprofit organization to operate the program, "City Bikes" was still exposed to theft due to the anonymity of the user. Therefore, a third generation of bike-sharing was created with an improved user tracking. The first third generation scheme was "Bike about" implemented in 1996 in England, where students could use a magnetic stripe card to rent a bike. The third generation of bike-sharing systems showed technological improvements, including electronically-locking racks or bike locks, telecommunication systems, smartcards and fobs, mobile phone access, and on-board computers (Shaheen 2010). It was only in 2008, that a global interest on bikesharing as a viable means of transportation ensued. In 2008, bike-sharing finally began to take hold, with new programs in Brazil, Chile, China, New Zealand, South Korea, Taiwan, and the U.S. While PBSP have almost become permanent fixtures in Western urban landscapes (in Europe, North America and Australia), its uptake in Asia has surprisingly been limited (Shaheen et al. 2013; Mateo-Babiano 2015). In 1999, the first bicycle sharing scheme in Asia was launched in Singapore. This was named as TonwBike but later on renamed as SmartBike (Larsen 2013). However, because of limited funding, the scheme ceased operation several years later (DeMaio 2004). At present, there are two schemes running in Singapore, a conventional scheme and another one being operated by a car-sharing company (Larsen 2013). South Korea has implemented twelve schemes while Japan has nine.

Except for China, considered to have the largest shared-bike market with a fleet of 858,000, the expansion of bicycle sharing within the Asian market has been relatively limited. A number of evidence arguably points to the scheme's high capital cost requirements as one of the key barriers for its slow uptake. In addition, some government agencies perceive a lack of citizen support, as in the case of Penang (Malaysia) (Loh 2015). Anecdotally, this can also be attributed to the limited awareness and the lack of understanding of its possible role as a green transport alternative within the context of Asia's distinctly diverse set of land use mixes, its potential in supporting the transport needs in dense urban centers and, most importantly, how it can complement the unique interaction between the formal (e.g. public buses) and informal forms of transport present in these cities (e.g. rickshaws, para-transits) (Mateo-Babiano 2015). However, there is a clear imperative to better understand how bicycle sharing is perceived by individuals and how these individuals comprehend the scheme's benefits, barriers and facilitators in order to assist in developing more targeted bicycle sharing and more informed policy making initiatives. To address this gap, this study examines the perception of stakeholders on the benefits as well as barriers and facilitators to the implementation of innovative PBSP technologies. To date, there has been limited information and analytics to inform low-carbon planning globally especially from the perspective of diverse stakeholders. In the drive towards achieving more inclusive and sustainable urban mobility, existing schemes in other regions could provide learnt lessons and best practices to Asia. The subsequent section, which is the literature review, aims to examine the current state of research in bicycle sharing research. This is followed by a discussion of the methodology. Section 4, the results and findings section will explore on the survey results and its glocalisation implications. This paper is then capped with the Discussion, Summary, and Conclusion section which will provide potential areas of further

در اجرای درخواست شما مشکلی رخ داده است

با سلام متأسفانه مشکلی در فرایند اجرای درخواست شما رخ داده است

همکاران ما در حال تلاش برای رفع این مشکل هستند

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اگر موضــوع مــورد نظر شـــما در لیســت موضوعات اصلی وجود نداشت، با استفاده از فیلـــد زیر می توانیـــد آن را در بیـــن کل مقاله های سایت جستجو فرمایید.

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پس از خریـد هر مقـاله، یـک کـد رهگیری منحصر به فرد به شما تقدیم خواهد شد که با استفاده از آن می توانید وضعیت خرید خود را پیگیری فرمایید

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