ProSPER.Net Leadership Programme 2018 Esteban Velez

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SDG Target 11.2

Case study: Beijing Mobike Technology Co. Ltd.

During the past two decades, the bicycle has reclaimed importance as a recognized means of transportation after almost half a century where car-centered cities prevailed. Cycling has gained momentum as a sustainable mode of transport while also working as a key tool for carbon emission reduction strategies in cities (de Nazelle et al., 2010) with promising co-benefits for public health, air quality, energy efficiency, social equity and efficient land use amongst others. Planners and policy makers have been exploring and encountering benefits and challenges when promoting cycling as a sustainable means of urban transportation (Pucher et al, 2010).

"Bicycle-sharing schemes comprise short-term urban bicycle rental schemes that enable bicycles to be picked up at any self-serve bicycle station and returned to any other bicycle station, which makes bicycle-sharing ideal for point-to-point trips. The principle of bicycle-sharing is simple: individuals use bicycles on an "as-needed" basis without the costs and responsibilities of bicycle ownership"[1].

Mobike is a Chinese Technology company founded by Hu Wei Wei, Davis Wang, and Xia Yiping in Beijing in January, 2015, just three and a half years ago. Their innovative idea was to develop and operate a Dock-less Bicycle Sharing System (DBS) by integrating Internet of Things (IOT) with Global Positioning System (GPS) technology to offer convenient, reliable and affordable bicycles trips.

This Beijing based company, offers its system in more than 200 cities, with more than 8 million bikes to 200 million registered users. This huge multinational's operation makes Mobike the largest Bicycle Sharing System (BSS) in the world. With an initial investment of US$300 million, Mobike is now valued at US$3 billion, and was recently acquired by Meituan-Dianping for US$2.7 billion in August, 2018.

Initiative 1:

Bike sharing data analysis to re think and develop sustainable transportation systems and land use in cities.

Mobike's business model not only provides mobility as a service, but also uses big data analysis to discover new opportunities to better understand people's transportation trends

[1] Peter Midgley, "Bicycle-Sharing Schemes: Enhancing Sustainable Mobility in Urban Areas". *Commission on Sustainable Development*, *19th session,* Paper No.8, (2011): p. 3.

and needs. The advances in mobile technology permits this smart bike sharing system to maximize efficiency in its operation while providing high value, reliable information to city planners and policy makers to assess mobility patterns in the cities. “Analysis of cycling data can help cities address traffic blackspots, improve the urban environment and better utilize space”[2].

The use of smart bike data permits a city to assess the true potential of public transit, re-evaluate transportation regulations and policies, track mobility strategies, and identify gaps in transportation infrastructure. “Data can also be used to improve connectivity between the BS network and public transport options, creating a more efficient and environmentally friendly transport network”[3].

If cities manage to embrace these types of technologies and services (through Private-Public Partnerships), the greatest benefit would be to reconstruct a tailored transit system to achieve sustainability in transportation and land use.

Mobike has collaborated with local governments and other relevant stakeholders to integrate its service into the specific characteristics of each city’s context and transportation system. Data insights collected by Mobike show the power of data to transform city mobility planning.

Evaluation:

Mobike so far has collaborated with cities by working with them, and not against them (in contrast to other micro mobility service providers in the US). Since many cities have offered some type of resistance or fear for bicycles invading public space and threatening pedestrian’s safety, Mobike has done an excellent job at reducing usage risks by educational campaigns and usage regulations. At the same time, it has managed to demonstrate quick cycling uptake due to bicycle availability. This business model works as a key tool for climate change mitigation strategies and traffic congestion reduction amongst other co-benefits for the city.

Sharing data with the city provides a huge benefit for both actors, since they can complement the public transit data and increase policy maker’s awareness of needed cycling policy interventions to foster higher usage levels of NMT. This data could also serve as a base to design and build cycling infrastructure, achieve multimodality and render multiple Public Private Parnerships (PPP) to improve sustainable transportation in cities (Bartuska et al, 2016)

Initiative 2

Fostering Accessibility, reducing inequity and promoting affordability.

[2] Mobike. “Bike-sharing and the City”, White Paper #1 (2017): 19.
[3] Mobike. “Bike-sharing and the City”, White Paper #1 (2017): 19.

4th generation docked BBS have been around now for more than two decades. These systems have proved to be real game changers for urban mobility and have shown their attractiveness for daily commuters, recreational users, and health seekers. The real success of this company was to make this service as convenient and accessible as possible. This not only depended on the availability of the bicycles and the usability of the platform, but also on their accessibility.

Mobike managed to invest in developing a bicycle and recently an e-bike, with more than 60 patents, which are durable and experience worthy. With GPS tracking and a resistant and unique fleet of bicycles, Mobike managed to amplify its coverage on to developing countries' cities with higher levels of insecurity (as compared to China, the US, and the EU) in Latin America and South East Asia that have never even had public funded docked BS. It also managed to service to middle and low income neighborhoods, and therefore increase marginalized communities opportunities through better access to jobs, markets, and schools through reduced transport time and cost.

Mobike's service also provides diverse social co-benefits such as decreased theft (through prevention campaigns), traffic jam reductions, increased accessibility to remote areas, increased reach of transit, attraction of new cyclists, improved city's image, and generation of investment in local industry (ITDP, 2013).

Even though the system requires a credit card and a deposit fee to use the service, Mobike is working with its parent tech company Ten Cent, to provide other payment methods and increase the potential user niche (especially to low income communities). This system has not only given access to a First Mile Last Mile (FMLM) mobility option for citizens, but has provided many marginalized neighborhoods efficient access to multimodal transportation and public transit. For many of those that a car is not financially attainable and that public transportation is not suitable or convenient, Mobike has also been a game changer. Bike sharing has shown to provide equal access opportunities for women (49%) and men (51%), as shown by the Ministry of Public Security of China (Mobike, 2018).

Evaluation:

'Bicycling and bike share have the potential to benefit disadvantaged communities by providing new options for accessing transit and jobs, while also providing an opportunity for recreation and physical activity'[4].

It's very important that cities realize the potential of Mobike as an ally to reduce inequity by generating access to public transit. At the same time, cities must understand that Mobike's service also generates better opportunities and lifestyles for marginalized communities, which usually are the last to benefit from new technologies. Working together though PPP or strategic alliances, cities could foster better access and affordability for more middle-low income communities by delivering flexible regulations and generating the right political conditions to support Mobike's organized expansion.

[4] McNeil, Nathan, MacArthur, John, Dill, Jennifer, Broach, Joseph and Howland, Steven. "Breaking Barriers to Bike Share: Insights on Equity" *Transportation research and Education Center*, (2017): p.1.

Increased coverage, lower user costs, and higher usage rate can be accomplished, all while offering a safe, convenient, reliable, and accessible service.

Initiative 3

Mobike's effect on public health, air pollution, cities livability, and CO_2 emissions.

DBS promotes good health for individuals as well as ameliorates public health in general and reduces public expenditure in preventable diseases (Bauman et. al, 2017). "Concerns of decreased levels of cycling safety are unjustified and should not prevent decision makers from introducing public bike share schemes, especially if combined with other safety measures like traffic calming"[5]. A case that perfectly exemplifies the assessment of this is in Barcelona; policies were implemented with an aim to promote active transportation, and neither pedestrians nor cyclist traffic injuries increased (Perez et. al, 2017).

Local economic development is seen to be fostered in bike-friendly neighborhoods with BSS stations. Time saving shows to be one of the major motivations and benefits for individuals who use BSS. (Faghih-Imani et.al, 2017). This positive externalities for individual users are commonly unseen by the current literature. Underestimated economic benefits are common in many cities appraisal of BSS and DBSS, but in Dublin the positive cost-benefit ratio of the investment on its BSS exceeds estimates when adding the individual's convenience and time saving components to traditional restricted appraisals (Bullock et. al, 2017).

DBS are also an important tool that benefit the environment by reducing CO_2 emissions, resulting in better air quality for citizens and reducing other pollutants which contribute to climate change. Bike sharing has great potential to reduce energy consumption and, thanks to its rapid growth, could be a potential tool to reduce GHGs in the coming years (Zhang & Mi, 2018). Mobike users alone have reduced carbon emissions in China by 540,000 tones and saved 460 million liters of gas by using the system (Mobike, 2017). "In 2016, bike sharing in Shanghai saved 8,358 tonnes of petrol and decreased CO_2 and NOX emissions by 25,240 and 64 tonnes, respectively"[6].

Evaluation:

CO_2 emissions constitute one of the largest challenges for humanity. Sustainable transportation, NMT, and especially cycling have the potential to contribute in a short period of time to mitigate cliamte change. Cities, as transformation catalysts, must

[5] Fishman, Elliot, and Schepers, Paul, "Global bike share: What the data tells us about road safety". *Journal of Safety Research*, *56*, (2016): p 41

[6] Zhang, Yongping., & Mi, Zhifu. "Environmental benefits of bike sharing: A big data-based analysis". *Applied Energy*, 220, (2018): p 300.

embrace exiting opportunities to champion active and Non Motorized Transportation as part of their strategies to reduce CO_2 emissions, air pollution, and non comunicable deseases.

Mobike should find inovative pathways to work with cities to not only achieve economic sustainability, but to increase cycling levels through policy interventions and PPP. Coordination and sharing information is the key to generate a cleaner transportation system for all cities, specifically those whose budget does not permit them to build massive public transit and those who historically have been building and promoting car usage as their mainstream transportation mode.

Conclusion

Mobike's revolutionary, privately funded business model provides extensive direct and indirect benefits to cities. Inviting and fostering this type of transportation systems is a necesary step that cities (espeically from developing countries) should assess carefuly before its initial deployment, therefore gaining the most out of them.Teaming up with DBS providers to enhance their performance and financial sustainability is a basic first step to achieve this. New opportunities for cities with the introduction of breakthrough technologies and inovative modes of transport (such as micromobility and Mobility as a Service (MaaS)), render a unique potential to offer a wider range of sustainable mobility options for a broader range of citizens. DBS must be seen and used as a tool to achieve sustainable transportation, therefore business success should be relevant for the company and for the city.

Topography, weather, average age of population, urban density, and relative safety are other important factors that may serve as potential elements for a successful DBS (Medard et. al, 2017). Other individual factors should also be taken into consideration and comparison with cities alike should be further developed by policy makers (Audikana et. al, 2017).

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