Activity Network

Sustainable Urban Mobility Model

Bike sharing system (BSS) is not a new concept. In fact, the first such system was introduced back in the 1960’s in the Netherlands. Unfortunately, the early programs were unsuccessful because of the lack of time constraints and the issue of bicycle theft due to user anonymity. It wasn’t until just a few years ago, that such systems gained popularity and success in cities around the globe (1).

Why now? The new-generation systems have mainly overcome many technical challenges that the past-generations were not equipped to handle since the technology wasn’t there yet. In the case of Divvy in Chicago, and similar systems in other cities, a creative business model was leveraged that made it possible for a wide range of system designs to work together and dramatically change the way people and non-human objects interact within urban environments (2).

- Public Bike Sharing Company (PBSC) created the first large-scale, solar-power bike share system in the world, in Montreal, Canada.
- PBSC is Motivate’s supplier in bringing ‘best-in-class’ technology and equipment.
- Motivate, is an American firm that is focused on operating large-scale bike share systems.
- Initial funding for the Divvy program came from federal grants to promote economic recovery, reduce traffic congestion and improve air quality, as well as additional funds from the City’s Tax Increment Financing program.
- Chicago Department of Transportation (CDOT), owns the city’s bikes, stations and vehicles.

A well designed and planned bike sharing system can play a complimentary role to existing public transportation infrastructure:

- MODULAR SOLUTION – plug & play installation and the use of solar panels on station kiosks no longer requires expensive and time-consuming underground electrical wiring.
- (RE)DISTRIBUTION & TRACKING – improved balancing of bike supply between stations and GPS technology now allows for improved collection of stolen bicycles.
- NON-ANONYMITY – credit card usage eliminates anonymity and reduces vandalism.
- TIME CONSTRAINT – 30-minute trips for Membership owners or Pass holders ensure responsible bike use and return.
- EASE OF USE – automated payment and checkout system as well as mobile finder apps make it easy to identify station location and bicycle availability in real time.
- WIRELESS COMMUNICATION – transaction kiosk’s infrastructure allows for payment processing and data transmission.
- ADVERTISING NETWORK – the station network may be used as an efficient outdoor advertising network, providing additional revenue.

SOURCES:
DIVVY Impact on Chicago
CASE STUDY / ANALYSIS

This analysis looks at how the Divvy bike share-system in Chicagoland measures against the 17 Sustainable Development Goals devised by the The United Nations Development Programme (UNDP). How can bike sharing contribute to city's sustainability? Let’s find out by considering the below factors:

- **Promotes active, healthy lifestyle**
  - Reduced pollution / less cars on the roads
  - Less accident-prone bikes

- **Health / Transportation / Design / Data & Analytics / Retail / Real Estate / City Planners**
  - Divvy however, needs to be a more inclusive business ecosystem especially when it comes to social sector and attracting new customers

- **Encourages recreational activities thus, in turn appreciation for natural surroundings**
  - Land is needed however, for bike stations throughout the city

- **Carbon free transportation / low greenhouse gas emissions**
  - Improves air quality
  - Reduces dependency on buses and other fuel-burning modes of transportation

- **Bike's design is unisex with step-through frame**
  - Provides new jobs around bike and station maintenance
  - Additional source of revenue for the city
  - Benefits tourism in Chicago
  - Utilizes the flat Chicapp landscape
  - Increases connectivity and mobility
  - Expansion of bike lanes onto more streets
  - Reduces rush hour traffic

- **Cheap bike-share can allow residents of poor, food-desert neighborhoods, have access to health-food stores more easily**

- **Energy self-sufficient bike stations powered by solar panels**
  - Bike's design is unisex with step-through frame that provides ease of access to a wide range of heights:
    - Though massive looking, it's lightweight enough for women riders
    - Still more male riders over female

- **Reduced rates for students**
  - Reliable transportation to and from school
  - (except for when there's snow on the ground)
  - Teaches sustainability values

- **Bike stations available across a wide city area**
  - Accessible to all, not only annual paying members
  - "Bike Divvy For Everyone" – reduced annual rate for low-income families
  - However, the reduced rate is only good for one-year
  - Still lack of stations in further west and southern parts of the city

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- **Kiosks utilize wireless communication for payment processing and data transmission**
  - Backend software management can locate bikes and track bike usage and operational condition
  - Most expensive system – both upfront as well as ongoing operational support

- **Low impact**
  - Kiosks utilize wireless communication for payment processing and data transmission
  - Bike stations available across a wide city area
  - Accessible to all, not only annual paying members

- **High impact**
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- **Provides new jobs around bike and station maintenance**
  - Additional source of revenue for the city
  - Benefits tourism in Chicago
  - Incur high cost if not returned in 30-min time frame / Much higher compared to cities like Milwaukee, WI

- **LOW IMPACT**
  - Health / Transportation / Design / Data & Analytics / Retail / Real Estate / City Planners
  - Divvy however, needs to be a more inclusive business ecosystem especially when it comes to social sector and attracting new customers

- **HIGH IMPACT**
  - Bike’s design is unisex with step-through frame that provides ease of access to a wide range of heights:
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SOURCE:

Grayed-out areas either do not apply or have not been covered in this analysis.
DISRUPTION

Evolving enterprise strategies

The Toolbox creates connections by making it easy for others to plug into the platform. This infrastructure enables interactions between participants.

How might we create smarter infrastructure?

• IOT: 
  Smart Connections = Smart Lives
• Data utilized by different stakeholders

Liberating potentials

The Magnet creates pull that attracts participants into their platform—a kind of social gravity. For transactions both producers and consumers must be present to achieve critical mass.

How might we create greater pull?

• Partnering for the goals
  • Set up a Reward System to facilitate Divvy users to go visit local restaurants, shops or museums

The Matchmaker fosters the flow of value by making connections between producers and consumers.

How might we increase the value exchange between producers and consumers?

• B2B – delivery
• B2C – Divvy stations
  • Good health and wellbeing
  • Economic growth
  • Partnering for the goals

PARTRNERING FOR THE GOALS

Divvy has collaborated with stakeholders and partners from many systems, all sharing a common purpose of create impact through sustainable, healthier and accessible options.

GOOD HEALTH & WELL-BEING


CLIMATE CHANGE

Reducing carbon emissions—every mile of bike riding offsets 0.6 lbs. of carbon emissions. Considering half a year a Divvy biker saves 450 tons of carbon emissions, that equals to planting 10,642 trees seedlings grown for 10 years.

ECONOMIC GROWTH

Increased savings for Chicagoans, between 6.5 million to 14 million, as an average Divvy rider saves on transit fees, of approximately $1000.

SUSTAINABLE CITIES & COMMUNITIES

System is not fully implemented as Divvy bikes could still be viewed as an option and not a necessity. A lot of impact could be created by the right amount of intervention by policy makers, in order to infuse behavioral change among people who in turn will help to use bicycles more.

REDUCING INEQUALITY

Approaching the challenge by:

1. partnering with a Local Initiatives Corporation to create a cash payment system
2. increasing equal number of stations both on the North and South of Chicago
3. hiring individuals with barrier to employment

Evaluation:

A system is only as good as its structure. Divvy’s establishment as an aggregated platform has successfully managed to provide local communities a reliable, alternate way of transportation. This has created impact through early adopters.

To transcend the current, Divvy needs to leverage its qualities (shared purpose) to become an influencing point for the larger communities.

RESOURCES:
