Solutions from Seoul

Sharing experiences in sustainable urban policy

Seoul's "Owl Bus" Based on Big Data Technology

The Seoul Night Bus, also known as the "Owl Bus," is the brand name of the city's intra-city buses that run nine routes exclusively from midnight to 5:00 a.m. Like an owl, animated in the dark with its glowing yellow eyes, the Owl Bus was created to make Seoul's public transportation service continuous by carrying the city's late-night commuters.

Background

Insufficient mobility rights for the socially and economically disadvantaged

From the opening of subway line No. 1 in 1974 through transportation reforms carried out in 2004, the Seoul Metropolitan Government (SMG) has steadily introduced measures to ensure greater convenience and better mobility for citizens. However, students and workers such as sanitary workers or small business owners returning home late night found it difficult to use the existing system. Most suffer from poor working conditions and low salaries, yet they still had to pay late-night extra charges when taking taxis to return home.

Seoul's Owl Bus has made late-night travel safer for residents and is saving them money.

Growing problems due to late-night taxis' refusal of passengers and illegal operation

During late night and dawn hours, there were not enough cabs available for all of the people who needed them. As a result, illegal operations by taxi drivers demanding extra fares or refusing passengers became common – seriously inconveniencing citizens.

Practical limitations made it difficult to control such irregularities, including a shortage of police officers responsible for preventing such violations and difficulties in proving that drivers were refusing passengers or demanding illegal excess fares – even when caught red-handed.

Public-private consensus on the need for new means of transportation

Seoul, transformed into a global city within just 50 years, has emerged as a prime mover for the global economy. As the city's industrial, economic and cultural activities expanded in size and scope, the citizens reached a consensus on the need for a bus service operating from midnight to dawn that would be safe and support urban dwellers' economic activities. It was also considered that nations such as Germany and the U.K. have already run similar services to promote the safety of the citizens and their rights to mobility.

An Owl Bus. Photo: Seoul Metropolitan Government

Goals and Objectives

- Improve convenience for those taking public transportation after midnight
- Lessen financial burdens on the economically disadvantaged, such as self-employed small business owners
- Address citizens' everyday concerns by customising policy measures, using big data technology

Resources

Budget

To finance the operation of the Owl Bus, budget provision was needed to pay for the labour costs and the installation of safety facilities such as protective walls for drivers and a speeding prevention system. However, these expenses were covered by the joint management funds for the shift from private to quasi-public bus operation. [1] Consequently, additional costs were not incurred.

Technology

Information systems connected inside the vehicles such as the Bus Management System, the Bus Information Unit and Bus Information Tool enable comprehensive control of the bus operations and efficient adjustment of intervals, while providing users and drivers with real-time operation information.

Human resources

The Owl Bus was introduced without incurring additional costs, and it increased operation revenues. The allocated resources are 45 vehicles and a total of 54 workers – 36 for driving and 18 for management.

Implementation and Expertise

Test operation of night bus at the request of citizens

Since 2012 the Seoul Metropolitan Government has operated the 120 Dasan Call Center and an official blog to better listen to the voices of the citizens, and developed various policy measures based on the information collected through these channels. Along the way, an opinion was received that the late-night taxi service is not only difficult to use but also imposes heavy financial burdens on users.

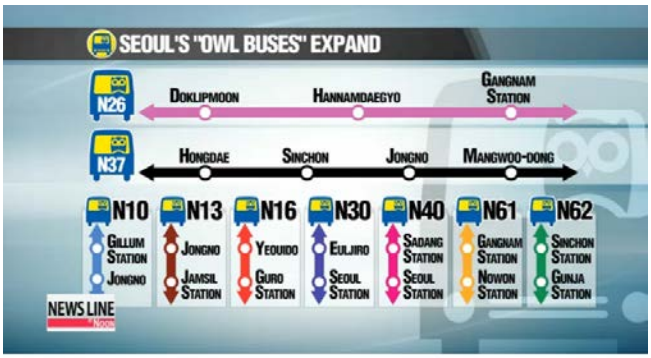
An on-site survey conducted for about six months from October 2012 found it necessary to operate a late-night bus service. As a result, starting from 19 April 2013, the city government began operating two pilot routes exclusively for an after-midnight service.

[1] Private bus companies' selective operation on profitable routes was a long-running concern for SMG. As a result, it shifted from private to quasi-public bus operation system. In the new system, Seoul manages the bus routes and revenues while private companies operate buses.

Expanding Owl Bus routes to nine

In the three months following the launch of the pilot, the service was used by 220,000 people, and the number of service routes raised to nine. The seven new lines were determined by the heavy concentration of people on the move during late night hours.

SMG conducted on-site research and analysed late-night mobile phone call volumes collected by Korea Telecommunication (KT) to construct a radial-shape network linking outer districts of the city with the hub areas such as Jongno and Gwanghwamun. The service began full operations on 16 September 2014.



Citizen participation in branding

With news regarding the Late Bus spreading over SNS channels, citizens suggested naming the late-night bus. In response, the city government invited public ideas for the naming of the service and, as a result the brand name Owl Bus, the letter "N" for Late Night, and the character that portrays an owl operating a bus were selected. These symbols have been used to mark bus stop signs, bus route map and numbers to distinguish the late-night buses from d ones.

Greater safety and convenience for citizens

The LED lighting panel attached to the front and sides of the Owl Buses help passengers recognise them easily in the dark and from a distance. Also, every vehicle is fitted with a device to prevent it from exceeding 70km/h. Partitions protect drivers from possible attacks of drunken or aggressive passengers, and a network of emergency contacts was established with nearby police stations to swiftly respond in case of emergency.

Conflict Management: Mediation and Resolution

As the service is the first of its kind in Korea, policy makers struggled to shape detailed action plans. The biggest tasks involved issues such as route selection, ensuring efficient operation and passenger safety.

- **Selection of bus routes: Big data analysis of late-night call volume.** During the initial stages of mapping out operations for the night bus, the issue of selecting bus routes emerged. The municipal government colour-coded regions by call volume based on data provided by a private communication service provider, KT. Then, it analysed the number of passengers who got on and off at each bus stop in the heavy call volume regions and connected the dots to develop the most pertinent routes.
- **Efficient operation: Optimising intervals.** As the intervals between buses grew greater for longer distance routes, SMG introduced a simultaneous dispatch system. Vehicles departed simultaneously from both ends of the bus line, minimising the interval gap. Passengers could easily transfer at the major intersections of different routes, optimising intervals to 30 – 40 minutes.
- **Passenger safety and convenience: real-time information.** The service provides citizens with real-

time operation information. Owl Bus riders can check arrival times and bus stop locations through the website or smartphone apps. Because the service operates late at night, safety measures are critical. Besides the protective partition and speeding prevention device, mandatory inspections before driving were instituted. Also, drivers with proven qualifications were paid generous wages so that they wouldn't take on other vocational activities during the day and could concentrate on nighttime driving.

Results

Safe and affordable transportation

The number of Owl Bus passengers continues to rise. Some 1,735,000 people used the service from September 2009 to June 2013, an average of 7,000 passengers each day. Passengers are saving money; the Owl Bus charges KRW 1,850 per trip, while the average taxi fare in the same timeframe costs KRW 8,000 – a savings of KRW 6,000. Considering that most of the passengers are students, self-employed small business owners or workers, the savings are expected to ease their household finances.

Most trips were concentrated from midnight to 3:00am, when students and workers return home after completing after-school studies and night duties. Because the late timeframe leaves people vulnerable, the Owl Bus helps them move more safely. The "Safe returning-home service" provided in cooperation with nearby police stations also reinforces passenger safety.

Income redistribution for the economically disadvantaged

Before the Owl Bus, residents had to pay up to tens of thousands of won to move from the city centre to a residential district outside the city. Now, they can complete their journey with just KRW 1,850. The savings are expected to lead to higher disposable incomes and income redistribution. As of 2013, the SMG estimates nearly KRW 14.1 billion worth of economic benefits have been redistributed.

Expansion of new IT markets in related areas

The Owl Bus has helped invigorate culture and IT technologies. Improved post-midnight mobility has revitalised late-night activities such as movies, city tours and shopping. With wifi networks in the buses, the communication industry is expected to grow further. And the ability to process transactions on the move has improved passengers' quality of life.

Applicability and Implications

Distribution of the manual to other local governments to benchmark

As residents of other cities show an interest in the Owl Bus through SNS channels, local governments and research institutes have inquired about the process and requested lectures on the Owl Bus. Many metropolitan governments have also expressed an interest; the Busan Metropolitan Government has already begun operating a late night service by extending the operating hours of existing intra-city buses, and Ulsan and Daejun are considering introducing a similar service.

For more on the Owl Bus or Seoul's best practice policies, please visit www.seoulsolution.kr/?language=en

Fig. 1: Average number of passengers per day on the Owl Bus

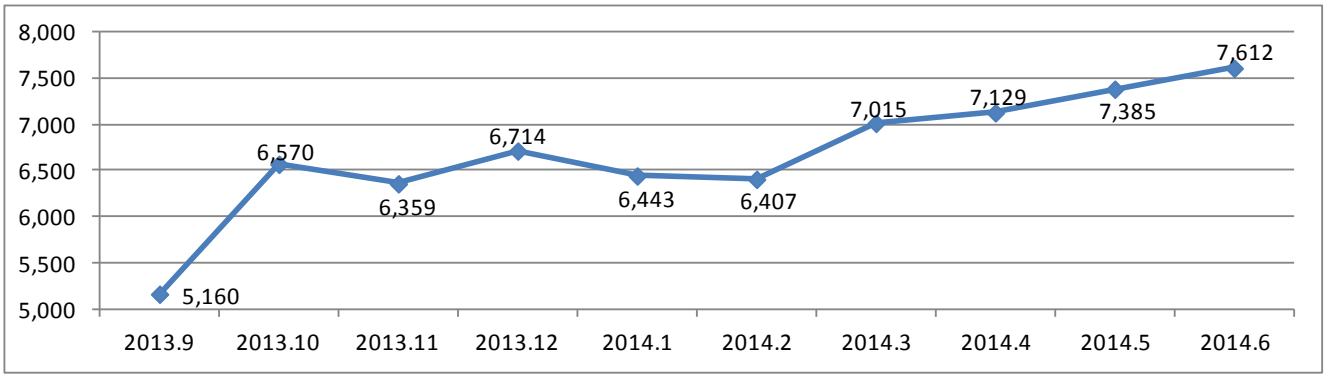


Fig. 2: Average number of passengers per hour on the Owl Bus

	Midnight	01:00	02:00	03:00	04:00	05:00	Sum
Daily average number of passengers	1,056	2,047	2,008	1,621	770	111	7,612
Proportion	13.8%	26.9%	26.4%	21.3%	10.1%	1.5%	100%

Fig. 3: Seoul's Owl Bus lines

Fig. 4: Citizens' Satisfaction Index