

The Characteristics of Rail-Integrated Urban Regeneration focused on Japan's Local Cities

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Abstract

This research is to analyze the method and features of urban regeneration and understand small and medium-sized local city's urban regeneration strategy in Japan, especially in regard to its six local cities, which are recently planning railway station redevelopment and urban regeneration. The objective of this research is to examine the city planning methods that can be applicable to the development of station influence area in small and medium-sized local cities, which are being excluded from the domestic urban regeneration business.

The locations of the following six railway stations are the most representing local cities in Japan that are actively participating in the urban regeneration business regarding the station influence area: Hakata station, Kumamoto station, Kagoshima central station, Oita station, Toyama station, and Iwamijawa station. It was verified that the area's restructuring was being pushed ahead based on the railway, which is internally Japan's core means of public transportation. Such restructuring was to overcome the decline of cities caused by the recent movement of the local city population to the suburb area. The characteristics of a railway integrated urban regeneration in each area can be shown as the construction of transfer system central to the railway station, active connection with the tourist attractions within the area, and high density and complex commercialization of the railway station.

Keywords: Rail-Integrated Urban Regeneration, Railway Station & Surroundings, Local Cities, Japan

1. Introduction

Lately, due to Japan's constant growth of the suburb resident population and aging population, city decline in local cities is rising as an issue. Accordingly, each local city is planning to actualize urban revitalization through increasing the resident population and the floating population, which is consequently leading to urban regeneration of declined cities. In the case of Japan, after the rail privatization, railway stations are gradually becoming the center of the residents' living by not only having the function of service and traffic, but also developing commerce facilities with high density. Thus, based on the railway system, which is one of the primary transportation systems, urban regeneration is actively in progress among Japan's local cities. This thesis will analyze the recent urban regeneration solution of Japan's six local cities along with the development of the railway station and the railway area, identify its characteristics and examine implications that can be given to Korea.

2. Research Method

The core of this research is to find the nature of city revitalization scheme on the basis of understanding characteristics of city spaces by looking at different cases. Methods of this research are as follows.

First, Develop databases such as geographical map on a case by case basis information, population, transportation system, and railway usage statistics to analyze characteristics of railway station and environmental characteristics. Second, develop databases on current city revitalization planning scheme including the master plan of urban planning, land use plan, park-and-ride system, floor plan of station development and architectural plan. Then, analyze the impact of urban influence of characteristics for each planning strategies. Finally, draw applicable methods for revitalization of local city around railway station in Korea based on derived measures from above analysis results.

Meanwhile, three actual in-site survey of each railway station and station influence area was made in year 2012. Furthermore, the uppermost limit of researching through references was supplemented by obtaining specific strategies through an interview with an expert related to JR Kyushu.

3. The Increase of Suburb Residence among Japan's Local City Population

Recently, Japan's local metropolitan city has shown rapid progress of the central area's decline and the population's movement to suburb areas. Several reasons of the central area's decline are the followings: increase of women and senior citizens obtaining driver's license, popularization of vehicles, and the change of the consumer needs. Furthermore, according to the change of the consumer needs, large commercial facilities in the city appeared to be relatively less attractive compared to the ones in the suburb, but this is explained by the analysis that consumers are not considering the city as a consuming area. Such movement of stores to the suburbs is mostly understood to be related to the secure of large parking lots. These large distribution stores usually provided free shuttle buses to residential areas. However, according to the survey result, citizens have pointed out that the central area is currently facing problems such as low satisfaction regarding the convenience of public traffic and the possibility of using the parking facility. Meanwhile, in Toyama's Town Residence Promoting Plan(2005), it states that the causes of urban cavitation are the progress of vehicle popularization and the city population movement to the suburb due to the active suburb development. Therefore, due to such causes of urban cavitation, Toyama explains that the vicious cycle of the city population decreasing is followed by the fall of purchasing power leading bad condition of the trade, evacuation of daily necessity stores, merge of the city elementary schools and etc. Additionally, since urban cavitation has an extremely high aging rate, there is a clear phenomenon of natural decrement as the death rate is exceeding the birth rate and the tendency of overall resident population decrease is continued because social increase such as the moving in rate is low. As a result, rather than focusing on the increase of total city population, focusing on the social increase of the actual resident population would be considered more practical in observing the pushing effect of the urban regeneration project.

However, Japan is paying attention on the inverse returning phenomenon such as from the suburb to the city. Furthermore, in response to such social phenomenon, several local metropolitan cities are identified to actually plan on revitalizing the city based on the railway station. The reason of the new social phenomenon can be explained through the next section of Japan's distinct characteristics in railway station and railway area developing plan.

4. The Possibility of Urban Regeneration Strategy based on the Railway Influence Area

4.1 Japan's Railway Construction and Privatization

Railways in Japan were first constructed in 1872 and at present, annually, there is 86.4 hundred million of the passenger transportation population, 182 enterprises of railway business operators. There are 9,627 stations(Based on April, 2000) in total of JR, private railway, and subway in Japan's whole territory, 169 railway business operators(six JR except the freight service, twelve public and corporation, fifteen major company's private railway, and 111 small and medium-sized company's railway etc.) being operated. In addition, JR's annual passenger transportation population is approximately 8.6 billion (8,634,000,000). As shown in the following table, railway has great importance as a public transportation within and between the cities and plays a large part in passenger transportation. Especially, the rate of passenger apportionment has decreased from 28.8% in 1995 to 27.1% in 2000, but it still shows high utilization rate worldwide compared to other means of transportations.¹

Table 1 Each Country's Railway Volume of Traffic and Passenger Apportionment Rate

Nation	Year	Passenger Apportionment Rate		Freight Apportionment Rate	
		0.1billion people. km	(%)	0.1billion ton. km	(%)
Japan	1995	4,001	28.8	251	4.5
	2000	3,843	27.1	222	3.8
United of Kingdom	1995	369	6	133	6
	2000	460	6	184	8
Germany	1995	750	8	688	16
	2000	751	8	760	15
France	1995	556	7.2	491	24
	2000	807	10	554	21
USA	1995	225	1	22,124	40
	2000	225	1	22,864	40

4.2 Connection between the Railway Business Operator and the Area

Especially, ever since Japan's railway privatization in 1987, it has been participating in the railway station's commercial development while playing the role as a public transportation facility and also creating economic profit. This fact is producing the result of railway stations having not only the function of service, but also other complex function and roles based on the railway business operator's business administration method in order to increase the operating margin through the creation of the railway's use demand. Accordingly, stations are simultaneously being railway stations and facilities such as department stores or cultural spaces, which ultimately provide shopping, meeting, culture, and relaxing areas besides the function as a station. This kind of station development is bringing the railway station in the

center of living and further connection to the development of the railway surrounding area, which is also being considered to become the base of the regional economy's revitalization.²

This phenomenon is appearing due to the operating principle depending on Japan's railway company's payability and the fact that privately-owned railway occupies the most in the railroad transportation, which follows the characteristic of Japan's internal public transportation operating method. In other words, this can be seen as the attributes appearing in Japan's urban space resulting from the maximized use of the railway as a means of transportation. Furthermore, Japan's business management method within the railway business to create operating margin through an absolute number of high operating demand, which leads to the railway station's complex function and role, can be another contribution in the result of Japan's use of urban space.

Japan has been increasing profit through Hanshin Railway Corporation in the 1920s by developing the railway track and other business such as real estate development and travel business. Additionally, after the privatization, based on the developing experience, business in amusement park, tourist service, leisure and travel are being developed at the same time as subsidiary enterprises. Furthermore, based on the regional tourist attractions, such as active volcano, hot spring, and castle, including nature and history, active connection with regional resources are being made around the railway station. Especially, one of the means of increasing profit is to sell rail-pass tickets to tourists and expand the number of Shinkansen or regular train passengers.

Namely, it can be seen that Japan's private railway raising the operating margin based on the local demand, constructing connection and transfer traffic to stimulate growth of the area with the railroad through the development of the railway station and the surrounding, and converging various functions such as area tour and the economy are generalized.³

5. The Analysis of Rail-Integrated Urban Regeneration Strategies

5.1 Case-by-Case Outline of the Railway Station

The subject of this study is redeveloping railway stations and those will be developed in future in Japan which is integrated with city revitalization planning local cities of Japan. It will involve 6 station influence areas including Toyama St. (JR East), Iwamizawa St. (JR Hokkaido), Kumamoto St. (JR Kyushu), Oita St. (JR Kyushu), Kagoshima Chuo St. (JR Kyushu), Hakata St. (JR Kyushu). These railway stations and areas have been chosen since year 2005 as these stations are considered as successful cases of city revitalization plan

¹ Un'yu Seisaku Kenkyū Kikō : Japan Railway seen through Numbers, (2003)

² Y.S. Lee, Asia Research Vol.14 no.3 (2011) pp.77--99

³ J.S. Lee and Y.H. Song, Journal of AIK , v.22 n.11 (2006) pp.161--168



Figure 1. Map of the Study Object

No.	Station	Company	Year	Line	Plan for Station Area	Perspective Photo
1	Toyama St.	JR East	2007-2014	Hokuriku Main Line Takayama Main Line Hokuriku Shinkansen (open in 2014) Toyama Chihō Railway Main Line Toyamakō Line		
2	Iwamizawa St.	JR Hokkaido	1997-2009	Hakodate Main Line Muroran Main Line		
3	Kumamoto St.	JR Kyushu	1991-2011	Kyūshū Shinkansen Kagoshima Main Line Hōhi Main Line		
4	Oita St.	JR Kyushu	1996-2013	Nippō Main Line Kyūdai Main Line Hōhi Main Line		
5	Kagoshima Chuo St.	JR Kyushu	1991-2010	Kyushu Shinkansen Kagoshima Main Line Ibusuki-Makurazaki Line		
6	Hakata St.	JR Kyushu	2004-2011	Kyushu Shinkansen Kagoshima Main Line Fukuoka Yutaka Line Sanyō Shinkansen Hakata Minami Line Kūkō Line		

Figure 2. Summary of the Study Object

5.2 The Characteristics of Japan Region's Railway station and the Railway Area Development

5.2.1 Relocation of the Urban Structure according to the Hierarchy of Urban Space

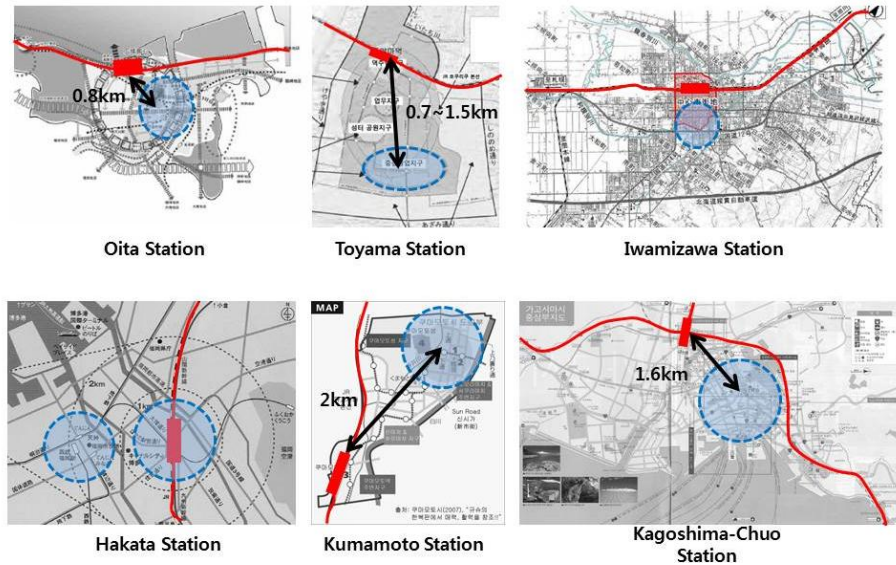


Figure 3. Distance from each Station to Existing Downtown

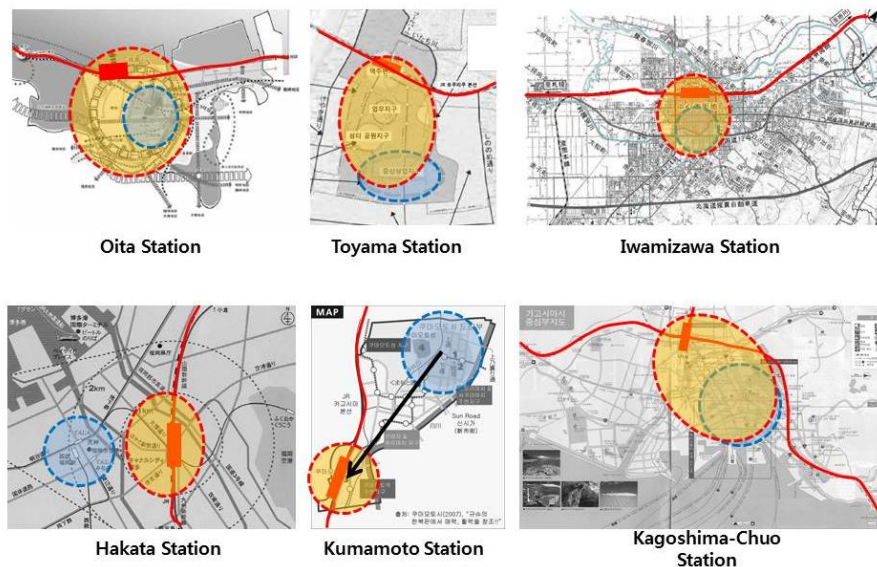


Figure 4. Restructuring of the Relation with Each Station and Downtown

Each city has established strict plan of the broad area regarding the relationship set-up between the railway traffic and the city. Based on this, each city has actively made connection between the geographical position and the station's function along the route by giving functional role to the relevant railway station within the city that has footing of the location condition. Accordingly, by considering the problematic situation of the relevant area's city until lately, the urban spatial hierarchy of the station center in response with the role of

existing downtown was reset and the functional hierarchy of the station influence area, where each station is located, was also rearranged. In the case of Oita station, Toyama station, and Iwamijawa station, which are adjacent to the existing downtown, the master plan of an urban general plan was built so that each railway station could have the relevant area's central hierarchy and at the same time, include the existing downtown and keep the center of life zone. In addition, Hakata station, also adjacent to the existing downtown and has two strategic points with the Tenjin area within the city, has set up equal urban spatial hierarchy. Lastly, Kumamoto station and Kagoshima Central station, away from the existing downtown, the urban spatial hierarchy has moved around the station influence area and reconstructed the existing urban structure so that a strategic point can be built between two stations.

Thus, each station appeared to secure the function as the city's new city zone or the local strategic point.

5.2.2 Construction of Transfer System Central to the Railway Station

Each railway stations plays the role of both the starting and ending point of various transportation means such as taxis, downtown area buses, ferries, subways and trams and connect the town.



Figure 5. Hakata Station's Transfer Area View and Plan

In other words, railway station as the starting point, bus, subway station, tram, *etc.*, which connect the central area of the city, are being operated. In the case of the bus, various buses depending on distance or route such as, intercity bus, tourist bus, downtown circulating bus, *etc.*, are operated. These public transportations are transferable among each other and routes are constructed to directly connect the urban and suburban tourist sites.

Thus, by actively developing or promoting the area's special tourism resources from the railway business operator and constructing various traffic transfer system which is accessible to relevant tourist attractions around the railway station, close relationship with the tourist site was established. This connection will make easier transfer and closely link tourist sites between the city and the suburb.

In addition, by pulling up the railway track from the ground which is combining the 'continuous and 3-dimentional construction project' and the adjacent plaza plan, it has maximized walking convenience with the adjacent plaza from each station's exit and considered to concentrate the transfer section within the plaza central to the railway station.



Figure 6. Kagochima-Chuo Station Transter system & Toyama City Tram Route

5.1.3 The Railway Station's High Density-Complex Commercialization

Recently, while removing the existing station and developing a new one, railway stations has not only increased the convenience and modernization of the station's traffic function, but also expanded commercial spaces such as department stores, shopping, food and beverage service, and retail stores, along with cultural, relaxing, and entertaining spaces completed the complex planning within the railway station. Especially, in the case of Kumamoto Station, the Integrated Government Buildings were relocated from the existing city center to the near station area and rearranged the district's base central to the station, leading to create the environment of railway station centered living as the foundation of each city center's city revitalization plan. In other words, the district base and living base has been reconstructed near the railway station by concentrating the function of the city within the station building and the railway area with high density.

6. Conclusion

Through this research, Japan's urban regeneration being actively in progress in local cities was identified based on the railway station. The urban regeneration solution characteristics planned along with Japan's recent railway station and railway area development in six local cities are the followings.

First, in Japan's local cities, based on the privatization of railway operator's business administration method, Transit Oriented Development under the foundation of the railway station is in process of planning. This, closely related with the local government and the railway business operator, became the basis of pushing ahead the railway station's development planning and relocation or restructuring of the integrated urban center function.

Second, while actively connecting tourism factors within the region with the railway station, by building the transfer system central to the railway station, it is increasing the number of railway passengers, thus creating the effect of the district's revitalization and increase of floating population.

Third, through the development of the railway station and the railway area closely connected to each district's city center revitalization project, it is identified to be re-developed in a complex and integrated manner.

Therefore, each railway station and the station influence area are planned to play the central role of rearranging the urban structure within the relevant area in the urban general plan or the urban reorganizing plan. The concept of such planning is to “create a sustainable city” around the station. In order to fulfill this idea, each railway station influence area territory is being set up as the strategic point of living and area, so that anyone can transport without burden within the set up territory, which simultaneously contains the function of the city.

Acknowledgements

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