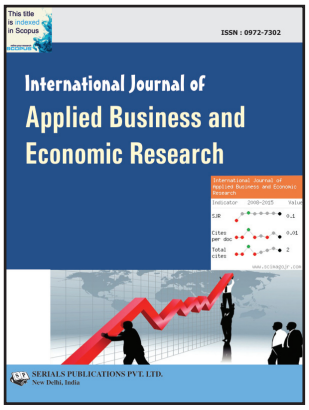

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A Studying of the Development Policy through Comparison of the Urban Spatial Configuration on the Main Station Areas in Seoul and Tokyo

Focused on the Stations in Budosim and Hukudosim

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ABSTRACT

Tokyo is superficially known the fact that to form a system of city around the inner cities is very convenient to use transit. So, this comparative thesis is to research its own character of urban spatial configuration on 6 sub centers called as Hukudosim stations among many stations in Tokyo and 4 sub centers called as Budosim in Seoul, and to suggest development policy in station areas. To do so, I make, at first, analysis theoretically through the related literature and by visiting about the formation of process, city planning, and the direction of encouragement to the Hukudosim and the Budosim. Second, I analyze on the urban spatial configuration on the 1km radius areas of transit line, where Hukudosim and Budosim are locate, to use buildings and land GIS data in Tokyo and Seoul. Through this, I get results as following: First, both countries the stations connect and concentrate on many other lines, and their areas have endowed own characters to reinforce the inner cities. Second, through the analysis of blocks, and lots, I can find out that the pattern of the stations areas are very dense but minute in Tokyo and are not in Seoul. Third, through land use and building usage, I can find that Tokyo shows various and specific character in each Hukdosim but Seoul dominantly occupied as two or three uses such as residence and commercial. Fourth, through floors and FAR I can find both cities are highly developed and Seoul has a few rooms to develop than Tokyo. These above test mean the stations and their areas are conveniently constituted to use a transit in Tokyo and inconvenient in Seoul in terms of Transit Oriented Development (Peter Calthorpe, 1993). Therefore, Seoul have to alter the urban development policy into reinforcing to remodel old buildings and to respect the existing contexts near station areas rather than totally depending on large scale urban renewal projects to get business profits. I am sure it works Seoul conveniently to use public transportation and to make more sustainable cities in the future (Peter Calthorpe, 2010).

Keywords: Development Policy, Seoul, Tokyo, Station Area Development, Transit Oriented Development, Budosim, Hukudosim, Sub Center.

1. INTRODUCTION

Each country of the world, but as urbanization proceeds rapidly and increase economic integration of the city, the various city-related issues has been reached. In particular, the increase of vehicle, emissions pollute the air in cities, and traffic congestion is becoming increasingly added. In order to solve this problem, cities expand the capacity and width and of the road. Our dependence on cars is in Korea 65 km, Japan 26.8 km, US 45.8 km, UK 45.8 km (Hong Gap Sun, 2008) can be very high compared to other countries.

To overcome this problem, it solves the city's traffic problems and environmental issues through a pedestrian activation of station areas. However, development efforts for station areas maintenance is only accelerating expansion of the city relied on indicators. Looking at the Tokyo and Seoul, this research can be regarded as a very meaningful and worthwhile to find our solution and set the development policy.

2. LITERATURE AND MATERIALS

The contents of this study is limited to literature study, areas survey, research data, and the related data analysis using GIS data of Tokyo and Seoul. I compare Tokyo's the selected GIS indicators with the Seoul's, and suggest a development policy and methods to utilize convenient transit.

The subjects of this study are confined to the selected stations as being a reference within a radius of 1km range areas which are the indirect influence of station (Lim Hee Ge, 2002).

Analysis is carried out by dividing blocks and lots, land use and buildings, and floors (Figure 44.2, 44.3) and FAR which are the key factors to evaluate urban structure and to use transit (Baik Kyung Moo, 2004). If the boundary of the 1 km radius areas will contain at least a majority, and is included in the analysis target.

2.1. Tokyo

The investigated stations among numerous stations in Tokyo set limits to Shinjuku, Shibuya, and Osaki located west of Tokyo's Hukudosim (Tokyo Metropolitan Government, 2007), and Ueno and Kinshicho east

Figure 44.1: Tokyo's Hukudosim

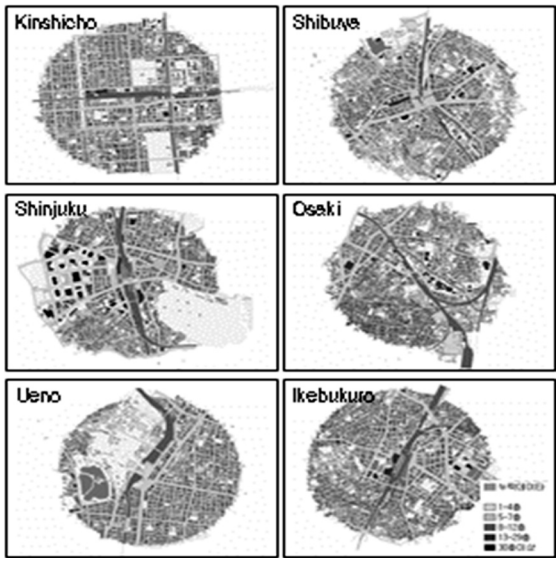

Figure 44.2: Tokyo-6 Hukudosim's floors GIS data

on the Yamanote Line (Figure 44.1). In particular, Rinkai newly developed city center is excluded from the investigation due to some distance from the city and more open area. In Tokyo's case, I utilized pre research (Baik Kyung Moo, Lee Sung Chang, Kim Hyun Gyu, 2010) data. (Table 44.1, 44.3, 44.5, 44.7, 44.9, 44.11)

2.2. Seoul

The investigated stations among numerous stations in Seoul set limits to Yongsan, Youngdeungpo, Samsung, Chungyangri, and Sangam (Seoul Metropolitan Government, 2005). Those are set to sub centers in Seoul In particular, Sangam newly developed sub center is excluded from the investigation due to the same above Rinkai's case.

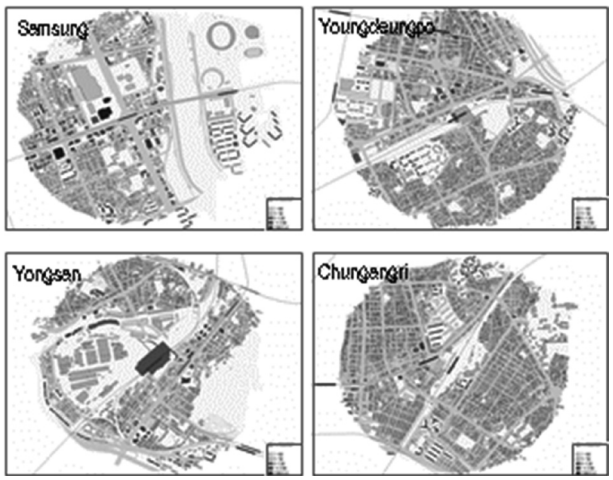

Figure 44.3: Seoul-4 Budosim's GIS floor data

Figure 44.4: Seoul's Budosim

3. PROPOSED WORK

3.1. Block and Lot

Blocks separated by roads produce total numbers, and different sizes with each station radius 1 km area in cadastral map.

In the case of Tokyo, the number of blocks within the radius of Kinshicho is the highest in a total of 676 units and Ueno is 646 units to the next and the remaining stations are about 450 units. The scale of average block is Kinshicho 3639 m^2 with the smallest and Ōsaki is 6385 m^2 with the largest (Table 44.1).

In the case of Seoul, Chungyangni is the highest number with 364, and Yongsan is the lowest with 125. The scale of average block is Chungyangri 6,489 m^2 with the smallest and Samsung 8,795 m^2, Youngdeungpo 9,337 m^2 and Yonsan 19,582 m^2 with the largest (Table 44.2).

Compared with Seoul and Tokyo, block numbers show that Tokyo is much higher than Seoul, and average block sale consist of that Seoul is greater than Tokyo. This shows that development unit of Seoul is bigger than Tokyo, and mean that pedestrians to use public transport are uncomfortable, and station areas make up cars friendly.

Table 44.1
Tokyo

Block \ Station	*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Block No.	676	458	450	448	646	459
Avg. Block size (m)	3,639	5,712	6,172	6,385	3,818	5,537
1,000 bellow	93	34	41	26	125	40
1,000~2,500	348	134	186	157	342	128
2,500~5,000	145	153	120	111	118	136
5,000~7,500	35	59	38	61	26	26
7,500~10,000	22	17	13	24	9	77
10,000~50,000	33	61	51	69	23	29
50,000 above	–	–	–	–	–	–

Table 44.2
Seoul

Block \ Station	*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Block No.	185	241	125	364
Avg. Block size (m^2)	8795	9337	19582	6489
1,000bellow	3	1	4	32
1,000~2,500	21	31	41	99
2,500~5,000	44	94	35	145
5,000~7,500	60	52	12	26
7,500~10,000	32	13	7	17
10,000~50,000	21	44	18	42
50,000 above	4	6	8	3

I also calculate building lots numbers and sizes within 1km radius of Hukudoim and Budosim station area. At this time, I exclude that roads and streams.

In the case of Tokyo, total numbers of lots within the radius of Kinshicho is the highest in a total of 5,828 units. Ueno (5,748) , and Ikebukuro (5,656) show with relatively high. On the other hand, Osaki (3,864), Shibuya (3,531), and Shinjuku (3,029) show in low (Table 44.3).

The scale of average lot shows Shinjuke (922 m^2), Osaki (742 m^2), Shibuya (738 m^2), Ikebukuro (450 m^2), Ueno (407 m^2), and Kinshicho (401 m^2) at a lower order.

In the case of Seoul, total numbers of lot within the radius of Chungyangri is the highest in a total of 10,951 units. On the other hand, Samsung (2361) identify at the lowest. The scale of average lot shows Samsung (687 m^2), Yongsan (431 m^2), Youngdeungpo (242 m^2), and Chungyangri (215 m^2) at a lower order (Table 44.4).

This may say that the selected subway station's confined areas in Tokyo are comparatively constituted with small block, and with fine grained city structure than Seoul's.

Table 44.3
Tokyo

Lot \ *Station*	*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Total Lot No.	5,828	3,531	3,029	3,864	5,748	5,656
Avg. Lot size (m^2)	401	738	922	742	407	450
150 bellow	2,811	1,121	1,094	1,406	3,296	2,353
150~200	690	367	272	391	581	675
200~250	290	269	217	268	397	434
250~300	316	184	173	212	296	349
300~500	703	553	429	493	541	781
500~1500	635	691	574	757	478	796
1500~5000	136	276	205	261	127	221
5000 above	47	70	65	76	32	47

Table 44.4
Seoul

Lot \ *Station*	*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Total Lot No.	2361	9235	5660	10951
Avg. Lot size (m^2)	687	242	431	215
150 bellow	194	6437	4028	8257
150~200	302	1159	565	1177
200~250	397	493	239	504
250~300	296	248	134	251
300~500	560	478	265	369
500~1500	492	314	262	282
1500~5000	90	64	109	74
5000 above	30	42	58	38

3.2. Land Use and Buildings

Of six Tokyo Hukudosim of land use, public use is dominant in Ueno and Shinjuke, and industry use numbers in Kinshicho and industry use sizes in Osaki. Commercial use is superior to in Shinjuke. Residential use in numbers is dominant in Shinjuke, and in sizes is in Osaki (Table 44.5).

Table 44.5
Tokyo

Use \ *Station*		*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Public	No.	244	200	221	196	306	306
	Size	584,326	516,435	1,069,249	561,284	1,054,742	623,505

Use \ *Station*		*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Industry	No.	1,119	93	35	488	682	193
	Size	31,546	45,032	65,555	466,917	157,770	61,322
Etc.	No.	719	344	294	445	594	760
	Size	172,426	132,433	171,619	196,821	87,838	151,584
Commerce	No.	827	1,072	1,963	495	1,429	1,098
	Size	382,017	925,149	1,026,235	474,008	497,233	566,904
Residence	No.	1,709	1,033	2,194	1,750	1,495	2,422
	Size	589,723	664,985	338,241	1,063,026	345,842	960,349
Complex	No.	968	789	403	490	1,242	877
	Size	31,514	17,573	323	106,232	11,248	34,810

Table 44.6
Seoul

Use \ *Station*		*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Public	No.	12	618	131	199
	Size	16,153	257,549	68,138	69,077
Industry	No.	–	139	35	–
	Size	–	67,133	41,387	–
Etc.	No.	–	–	12	1
	Size	–	–	82,238	722
Commerce	No.	14,191	2,795	1,963	2,181
	Size	1,015,832	891,423	682,154	557,337
Residence	No.	869	4445	2194	6463
	Size	508,943	852,709	664,308	1,142,833
Complex	No.	286	1,157	781	1,838
	Size	80,054	155,631	524,350	302,242

In case of Seoul, public use is dominant in Youngdeungpo and industry use in Youngdeungpo. Commercial use is superior to in Samsung. Residential and complex uses are dominant in numbers and sizes in Chungyangri (Table 44.6).

Compared with Seoul and Tokyo, land use show that Tokyo consists of various land, and Seoul consist of mainly commercial, residential and complex use. It means that Seoul is biased to develop houses and shops to take full development gain rather than to endow urban characteristics according to match with each sub centers context.

Also, Compared with Seoul and Tokyo in terms of facilities, Tokyo's Hukudosim are allot to the specified building use and facilities such as Kinshicho-residence, Shibuya-commerce, Shinjuke-public and business, Osaki-commerce and public, and Ikebukuro-residence (Table 44.7). In the contrary, Budosim is all set into commerce and residence use with the only oriented development profit (Table 44.8).

Table 44.7
Tokyo

Facility \ *Station*		*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Public	No.	233	336	282	263	458	349
	Size	285,544	689,980	878,537	268,795	684,040	730,903
Factory	No.	1705	111	127	891	837	236
	Size	549,308	73,738	75,050	842,947	322,608	113,853
Etc.	No.	2	11	19	22	–	–
	Size	2,110	112	9,195	3,343		
Accommodation	No.	183	157	725	781	264	194
	Size	226,056	559,228	1,702,302	187,394	290,296	442,820
Office	No.	645	391	1,227	536	1,673	995
	Size	916,935	2,615,635	4,708,449	1,655,949	1,544,853	1,618,820
Residence	No.	6,007	5,068	2,572	6,740	5,283	7,869
	Size	2,588,550	2,170,644	1,277,272	2,453,308	1,562,834	2,191,226
Commerce	No.	269	2,534	556	171	742	749
	Size	477,535	9,805,391	302,071	302,071	4,606,647	1,359,383

Table 44.8
Seoul

Use \ *Station*		*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Factory	No.	4	272	125	51
	Size	12,232	741,702	250,092	96,712
Etc.	No.	63	124	32	204
	Size	400,282	334,052	61,042	529,162
Accommodation	No.	15	157	91	100
	Size	151,172	203,092	85,892	120,572
Office	No.	375	391	358	265
	Size	2065552	676,462	680682	419532
Residence	No.	880	5068	2198	8335
	Size	1842252	4,012,652	1,844,092	6,152,212
Commerce	No.	561	2,534	1,153	2,597
	Size	1302242	3,013,732	2,026,602	2,696,252

3.3. Floors and FAR

In case of building floor average numbers in Tokyo, Shinjuku is 4.3 floors with the highest and Osaki is 2.7 floors with the lowest. Low-rise buildings are shown a lot in Kinshicho, Osaki, Ueno, and Ikebukuro and a few in Shinjuku and Shibuya. Mid and mid high-rise buildings are shown the highest in Ueno, and the lowest in Osaki, while high and super high- rise buildings are calculated the highest in Shinjuku and in Shibuya, and the lowest in Ueno. Especially, Shinjuku is known that above 30 floors buildings have 18 numbers (Table 44.9).

Table 44.9
Tokyo

Station / *Floors*	*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Avg. Floors	3.1	3.7	4.3	2.7	3.5	3.0
Low (1-4F)	7,620	4,795	3,554	7,859	7,051	8,809
Mid (5-7F)	1,012	1,022	1,142	475	1,620	888
Mid high (8-12F)	369	640	731	314	566	653
High (13-29F)	43	46	63	52	20	40
Super High (30F above)	–	3	18	1	–	2

Table 44.10
Seoul

Station / *Floors*	*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Avg. Floors	4.6	2.35	2.27	1.98
Low (1-4F)	1,233	8,057	3,670	11,210
Mid (5-7F)	437	349	230	280
Mid high (8-12F)	167	72	30	20
High (13-29F)	73	103	54	85
Super High (30F above)	5	5	1	–

In case of building floor average numbers in Seoul, Samsung is 4.6 floors with the highest and Chungyangri is 1.98 floors with the lowest.

Low-rise buildings are shown absolutely a lot in Chungyangri and a few in Samsung, and mid and mid high-rise buildings are the opposite result. High and super high- rise buildings are calculated the highest in Youngdeungpo and the lowest in Chungyangri. Especially, Samsung and Youngdeungpo are known that above 30 floors buildings have both 5 units (Table 44.10).

Generally to compare Tokyo and Seoul in terms of average floors, Shinjuku and Samsung indicate a similar figure, but the other Tokyo's stations are higher than Seoul's. I am able to identify that Shinjuku, Shibuya, Samsung, and Youngdeungpo consist of high density development in both cities.

Floor area ratio in Tokyo shows Shinjuke, Shibuya, Ikebukuro, Kinshicho, Ueno and Osaki at a lower order, and it consists from maximum 460% to minimum 240% (Table 44.11).

Floor area ratio in Seoul also shows Samsung, Youngdeungpo, Chungyangri and Yongsan at a lower order, and it consists from maximum 193% to minimum 114% (Table 44.12).

Table 44.11
Tokyo

Station / *FAR*	*Kinshicho*	*Shibuya*	*Shinjuke*	*Osaki*	*Ueno*	*Ikebukuro*
Total Floor (m^2)	5,046,016	7,094,899	10,131,663	5,713,762	4,865,366	6,457,061
Areas (m^2)	1,729,809	2,353,001	2,203,646	2,372,370	1,993,738	2,144,854
Avg. FAR	297%	301%	460%	240%	244%	301%

As compare each other, Tokyo's FAR is almost double Seoul's. This means that Seoul's Budosim still has many rooms for developing.

Table 44.12
Seoul

Station / *FAR*	*Samsung*	*Youngdeungpo*	*Yongsan*	*Chungyangri*
Total Floor (m^2)	4,318,195	3,095,603	2,462,655	2,897,742
Areas (m^2)	2,232,375	2,158,405	2,154,432	2,351,609
Avg. FAR	193%	143%	114%	123%

4. CONCLUSION

Based on results derived on the above, the development of policy in Seoul's sub centers subway stations should be established in mind as following.

At first, Urban Spatial Structure of Tokyo is further fine grained and more walkable for pedestrian according to a block and lot of land near radius 1km in Tokyo's Hukdosim and Seoul's Budosim. Form of the development of Seoul's sub center subways has from now on a large an emphasis on the remodeling in deteriorated buildings rather than super block oriented development. So, it should be sought transit oriented city.

At second, Tokyo is distributed variously and equally among uses and facilities as a comparative analysis of land use and the state of facilities, and Seoul is set lean to commerce, residence and complex uses. This has a need that the development policy has to set the specified function and role into each station escaping from development profits,

At third, Tokyo is much high developed than Seoul and it has sufficiently rooms to develop in Seoul according to floors and FAR.

I conclude that the development policy in Seoul has to change a direction into pedestrian oriented development than car oriented development continuously, and reinforcing to remodel old buildings rather than entirely relying on urban renewal with producing many super blocks. By doing so, our city reaches to be convenient to pedestrian and sustainable.

Acknowledgments

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