

# Analysis on Preferred Elements of Urban Regeneration Design -Focusing on the Case of Bongsan Village-

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## 도시 재생 디자인 선호 요소 분석 -봉산마을 도시재생 현황을 중심으로-

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**Abstract** The urban regeneration project is an activity that promotes the economy in underdeveloped commercial or residential areas and maintains urban communities through improvement of living in residential areas. Through this study, various successful cases of urban regeneration at home and abroad and surveys related to urban regeneration in Bongsan Village, Yeongdo, Busan were collected and analyzed. Key keywords for each case were derived, grouped, and top keywords were created. The 13 top keywords were evaluated using Likert's 5-point scale, and AHP was conducted for the 10 keywords that were finally selected. As a result of AHP analysis, the preference for "spatial and physical properties" was derived in the order of "publicity", "sustainability", and "identity". The preference of "content and system properties" was derived in the order of "resident participation", "convenience", "locality", and "local government participation". It is necessary to present a role as a design guideline for establishing urban regeneration designs in relation to various urban regeneration projects that will become more active in the future through the analysis of preferences of urban regeneration keywords derived through this study.

**Key Words** : Urban Regeneration, Urban Revitalization, Bongsan Village, AHP, Pairwise Comparison

**요약** 도시 재생 사업은 낙후된 상업지역이나 주거지역을 대상으로 경제를 활성화하고 주거 지역의 생활의 개선을 통해서 도시의 공동체를 유지하는 활동이다. 본 연구를 통해서 다양한 국내 및 해외의 도시재생의 성공 사례 및 부산 영도 봉산마을 내 도시 재생 관련 설문 내용을 수집하고 분석하였다. 분석에 따른 각 사례별 주요 키워드를 도출하여 이를 그룹화하고 상위 키워드를 작성하였다. 13개의 상위 키워드를 리커트의 5점 척도를 활용하여 평가하였으며, 최종 선정된 10개의 키워드를 대상으로 AHP를 진행하였다. AHP 분석 결과 "공간 및 물리적 속성"에 대한 선호도는 "공공성", "지속 가능성", "정체성" 순으로, "컨텐츠 및 시스템 속성"의 선호도는 "주민 참여", "편의성", "지역성", "지자체 참여" 순으로 도출되었다. 본 연구를 통해서 도출된 도시재생 키워드의 선호도 분석을 통해 향후 보다 더 활성화되는 다양한 도시재생 사업과 관련하여 도시재생 디자인을 수립하기 위한 디자인 가이드라인으로의 역할의 제시가 필요하다.

**주제어** : 도시재생, 도시 활성화, 봉산마을, AHP, 쌍대비교

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## 1. Introduction

### 1.1 Background and purpose of the research

Through urban regeneration, old elements can be preserved and diverse users can enjoy the services and contents required in the old environment in accordance with the changing trends of society. In addition, It is important to have elements and environments that allow users to gather in the old urban environment where the number of residents is gradually decreasing. Urban regeneration means influencing more populations through the construction of various contents and software, and consequently reactivating cities. The old elements were not discarded, but became the object of being reborn as a culture of the city. The way cities are treated is changing in a way that preserves the city's culture and makes appropriate use of local resources[1].

In particular, Yeongdo, Busan, is a region implementing the New Deal for Urban Regeneration, and various urban regeneration projects are being attempted based on old villages. Therefore, based on the current state of urban regeneration in Bongsan Village, Yeongdo, the research intends to derive the main elements necessary to proceed with the design for urban regeneration in the future, and to analyze the preference of each element by grasping the correlation between each element. The research will present guidelines for major design activities to proceed with urban regeneration in the future.

### 1.2 Boundary and method of the research

In this study, various domestic and foreign cases of urban regeneration were investigated and analyzed. The scope of urban regeneration cases conducted overseas and domestically was set, and a total of 17 cases were drawn through them. Through the analysis of this case, the main keywords for each case were derived, and a total

of 221 keywords were selected. The derived keywords were grouped into similar attributes and the top keywords were derived.

A total of 13 high-ranking keywords were derived, and the preference survey for each keyword was conducted through two stages. A survey was conducted with 35 researchers currently in charge of this project. The questionnaire was conducted using Likert's 5-point scale and AHP (Analytic Hierarchy Process), and AHP was conducted for a total of 10 top keywords based on the results derived from the Likert survey. Final 10 keywords are grouped into two properties of "Spatial & Physical" and "Contents & System".

## 2. Definition and role of urban regeneration

### 2.1 Definition of urban regeneration

The concept of urban regeneration began as a result of the decline of European industry after World War II, and it encompasses urban redevelopment as a whole[2]. Through urban regeneration, it is possible to rebuild an underdeveloped city and induce external populations, and as a result, the city can be expected to revitalize. In addition, through the revitalization of the city, the number of residents increases along with the increase of the population in the city, and the commercial district can also develop accordingly.

Since the 1950s, developed countries have focused on physical environment maintenance such as urban reconstruction, urban revitalization, total redevelopment, and urban redevelopment in order to cope with the reduction of investment in urban areas, economic stagnation, aging infrastructure in the old city center, decline in commercial functions, and urban cavitation. In the case of Korea, the

rapid urbanization process led to quantitative urban growth such as new city development until the early 2000s, but due to the calm of urbanization and the improvement of the income level of the people, it responded to the aging of existing cities and improved the environment qualitatively[3].

In order to promote Urban Culture Revitalization, it is necessary to increase the influx of the population by activating the city that is basically underdeveloped, and consequently, an effort to revitalize the underdeveloped city economically and culturally by restoring the function of the city. Currently, the regeneration method of urban culture is being studied worldwide in various ways through city branding or through space regeneration[4].

## 2.2 Case analysis for urban regeneration

In order to grasp the nature and status of urban regeneration, cases related to urban regeneration at home and abroad were collected. A total of 18 cases were collected, and limited to 7 domestic and 11 overseas. The names, contents, features, and keywords for each case are written as shown in Table 1. Each cases are sorted and selected through searches in RISS(Riss.or.kr) with the keywords of “urban regeneration”. And the cases are finally selected with the higher chances of exposure from the related researches.

Table 1. Domestic case analysis

Name	Contents	Features	Keywords
Jongno-gu Ikseon-dong, Seoul	Commercial conversion by renovating a 100-year-old hanok house Collecting commercial districts to design urban regeneration	100-year-old hanok cluster area Restaurant, cafe workshop, etc.	Hanok and commercial districts Private-led Tourist destination
Kang-Kang-i Art Village, Busan	Change from a port town in crisis to an art town Preservation of modern industrial heritage and historical and cultural resources	Indirectly viewing the scenery of the old shipyard Old residents live together	Old shipyard Art Local government led

Seongsu-dong, Seongdong-gu	Industrial factory clusters such as printing shops and handmade shoe makers The empty warehouse remodeled and operated as a workshop, studio, and cafe.	Community-led village promotion and research Tour route showing the history of the village	Town-led Education Tourism Program Souvenir development
Seoulro 7017 [5]	Urban regeneration park of Seoul Station overpass Consider connection with buildings, surrounding parks, buses, subways, etc.	Convenient facilities and small squares Reflecting opinions of citizens No greenery	Citizen participation Footpath rather than a park
1913 Songjeong Station Market, Gwangju [6]	Transforming the traditional market to form a cultural and art street Creation of a creative studio through repairs to old houses, etc. Indication of the year of the building's creation to show traces of the years	Support from large domestic companies Traditional Market Revitalization Project	100 years of history Retro Culture art street Brand formation
Guryongpo Modern Culture Street, Po-hang	Arranging the remaining Japanese houses for tourist destinations Recreating the past, such as preservation of restaurants and tea houses at the time	Modern history, restaurants, and cafes A space reminding history	History Promotional effect Local government led

Table 2. Foreign case analysis

Name	Contents	Features	Keywords
Arao City, Kumamoto, Japan	Promoting regeneration projects to prevent decline in coal mine villages Establishment of regional symbiotic base facilities Revitalization of local communities by creating local employment opportunities	Regeneration business in consideration of the elderly Local products created by various local entities	Focused on the elderly Community formation
798 Art District, Beijing, China [7]	The weapon factory area is transformed into a colorful art street. Culture space with a workshop, gallery, office, restaurant, etc.	Harmony of old buildings, cement walls and contemporary art Chinese unique colors	Idle space Use of culture Past, present and future connections
Cable Car, Bolivia	Public transport for high terrain An observatory at the station and operation of commercial facilities Local community vitalization	Developing countries Urban revitalization using cable cars	Public transport Economic activation Community
Malmö, Sweden	Started an urban renewal project called “Tomorrow’s City” Advocating an eco-friendly and high-tech knowledge industry Activating the influx of young people by constructing Malmö University	Using eco-friendliness as a driving force for urban regeneration Creation of more than 60,000 jobs related to renewable energy	Eco-friendly Urban regeneration based on high-tech knowledge industry

Bilbao Project, Spain [8]	City's competitiveness disappears as the steel industry declines Transforming Bilbao from an industrial city to a cultural city Focusing on the establishment of the Guggenheim Museum	City brand through landmark architecture Various urban infrastructure River clearing business and residential area maintenance	Value according to social change Culture-led urban regeneration
Hamburg Hafencity, Germany	Urban functions decline due to changes in industrial structure Designated development area into 10 zones Each zone is kept independently	Long-term projects from 1990 to 2030 Aiming to transform into a city where people live	Long-term planning Separation of 10 zones
Superkilen Project, Copenhagen, Denmark [9]	Formation of three different squares, providing a special experience to residents Different concepts and characteristics for each square	Characteristics of local residents Using bold colors Active participation of local residents	Plaza-centric Bold color Various images Resident participation
Klatsatama Smart City, Finland [10]	A project underway from 2013 to 2030, now transformed into a smart city	Urban redevelopment Change of land use from port area to residential area Total mobilization of technology for the 4th industrial revolution	Long-term project Smart city 4th industrial revolution Citizen participation
Promenade plantée, France [11]	Abandoned elevated railway in Paris 12 district Started urban renewal business in the 80s and built the Bastille Opera House theater in 1984	70 red brick arches restored and blocked with glass as art craft workshops and gallery furniture exhibition halls, and etc.	Opera house Garden on the elevated railroad Various cultural spaces
Kasarna Karlin, Prague, Czech Republic	Reclaimed barracks used by the National Guard, which had been neglected for 30 years. Used as a cafe, volleyball stadium, playground, studio gallery, external cinema	Reorganized into a space of various functions, such as project implementation by local artists	Idle space Cultural oasis Urban regeneration through art
Granville Island, Canada [12]	Redevelopment of waste incinerators, etc. along with the specifications of heavy industry in the 1970s The Canadian government and the city of Vancouver established a project to proceed with the project.	World tourist attraction Maintaining the natural environment and personality Coexistence of the past and present	Complex cultural art space Reorganized into an art space

### 3. Bongsan Village Urban Regeneration Status

#### 3.1 Bongsan Village Urban Regeneration Policy Status

Bongsan Village is a residential area with a

total population of 6,020 and households of 2,900 as of April 2018. It is located uphill at the foot of Mt. Bongnae, and is located in an area with a panoramic view of Busan Port along with a narrow alley. It used to be the residence of shipbuilding workers in the past, and now, the rate of increase in public and abandoned houses is among the highest in the country. Commercial facilities such as marts, convenience stores, cafes, restaurants, and pharmacies exist in the redevelopment area. Through the Bongsan Village New Deal project, four regeneration projects are currently underway: residential environment regeneration, living environment regeneration, village job regeneration, and village community regeneration. Bongsan Village's current abandoned and empty house rate is 20%, and the annual average population decrease rate is the third among 69 autonomous districts nationwide. From 2008 to 2017, the rate of aging over 65 was the highest in the country, and the average age reached 47.1.

#### 3.2 Bongsan village resident interview survey analysis

A total of 14 residents of Bongsan Village in Yeongdo were surveyed and interviewed, and the following results were derived.

Table 3. Interview analysis for Bongsan village

Name	Interview Contents	Keywords
Culture	: Cultural space and shelter are needed. : A lot of cultural and art facilities are lacking. : After urban regeneration, there has been a lot of increase in cultural facilities, and local specialization projects (blueberries) have changed significantly. : Revitalization of the village through cultural facilities where residents and outside work can work together	Cultural space Art Facility Work exchange
Education and experience	: Inducing more tourists through various experiences. : Blueberry experience, different alley scenery, etc. are impressive. : Alley decoration, mural painting, athletic meet, garden festival, etc. are good. : It would be nice to have content that could attract new businesses or attract population. : Need of a place to see and communicate using sea view and a place to learn.	Experience program Mural painting Learning

Commercial facility	<ul style="list-style-type: none"> <li>: Parking facilities and town information are insufficient and commercial facilities are needed.</li> <li>: Since commercial facilities are insufficient, it would be nice to have a large mart in the village.</li> <li>: Roadside shopping area regeneration and activation</li> </ul>	Need of commercial facilities & roadside shopping area
Facilities	<ul style="list-style-type: none"> <li>: The pedestrian environment of Bongsan Village is mostly unsatisfactory.</li> <li>: City gas is not supported.</li> <li>: Public transportation is not very inconvenient.</li> <li>: Safe and comfortable pedestrian path maintenance</li> <li>: Maintenance of old stairs, installation of walking aids</li> <li>: Creating a safe night street</li> <li>: Town management is continuing well.</li> </ul>	Pedestrian path maintenance  Town management
Inconvenience	<ul style="list-style-type: none"> <li>: Increasing garbage and noise due to the increase of visitors are inconvenient.</li> <li>: Residential environment regeneration and village community regeneration are satisfactory.</li> </ul>	Need of residential environment regeneration

#### 4. Analysis of preferred elements of urban regeneration design

##### 4.1 Developing preferred keywords for urban regeneration design

Keywords were extracted from domestic and overseas urban regeneration cases and interview results of residents of Bongsan village in Yeongdo. In addition, by grouping each keyword by attribute, a total of 13 high-level keywords were derived as shown in Table 4.

Table 4. Keywords grouping

Keyword	Sub Keyword
Sustainability (SU)	Eco-friendly city, environment water, renewable energy, resource circulation type, architecture, nature in the city, green transportation, abandoned railway, environmental protection, newer than new, conservation and creation, maintenance of the existing appearance, asset regeneration, long-term recycling, Environmental protection, etc.
Publicity (PU)	Park creation, public space, public support, open space, plaza center, elevated park, pedestrian center, walking culture, easy access, public art, community, village community, murals, garden+rest, environment improvement, community activation, etc.
Locality (LO)	Village branding, local content, local commercial districts, local assets, local brands, local characteristics, souvenirs, community platforms, eco-friendly alleys, etc.
Resident participation (RP)	Citizen participation type, new jobs, revitalization of commercial districts, voluntary participation, private initiative, local companies + local residents, etc.

Identity (ID)	Bold colors, tradition and latest trends, startups, BI, symbolism, local culture representative brands, village identity, various contents, etc.
Commerciality (CM)	Modern industrial heritage, circulation, industrial city, job creation, housing support, living infrastructure, spatial welfare, tourism activation, nature tourism, central city neighborhood regeneration, etc.
PR strategy (PR)	SNS, use of popular songs, souvenirs/special products, local government books, local specialization, film shooting, BI, homepage, culture and arts programs, etc.
Local government participation (GP)	Local government and company-led, social enterprise, government-led, cooperation project, social enterprise, cooperation project, public-private military cooperation, etc.
Convenience (CO)	Social system and infrastructure, transportation convenience, residential environment improvement, smart city, security, accessibility linkage, safety, various facilities, etc.
Artistry (AR)	Artist studio, young artist, bold color, public art, harmony with surroundings, contemporary art, art street, mural, graffiti alley, etc.
Historical (HI)	History, historic sites, industrial relics, shipyards, historical restoration, past/present/future connection, preservation of modern industrial heritage, harmony between tradition and modernity, remodeling, etc.
Experience (EX)	Flea market, festivals, various attractions, contents, culture and arts programs, citizen participation type, experience elements, experience space, education, etc.
Complexity (CP)	Complex cultural space, cultural break, shopping and work, space of communication, storytelling, collaboration, harmony, culture-led, fusion of culture and technology, etc.

##### 4.2 Analysis of preferred keywords for urban regeneration design

A questionnaire was conducted using the Likert Scale to analyze preferred keywords. The Likert Scale is one of the psychological test

Table 5. Case Analysis for urban regeneration

Keyword	Average	Rank
Sustainability(SU)	4.405	1
Publicity(PU)	4.395	2
Locality(LO)	4.316	3
Resident participation(RP)	4.263	4
Identity(ID)	4.237	5
Commerciality(CM)	4.158	6
PR strategy(PR)	4.054	7
Local government participation(GP)	4.053	8
Convenience(CO)	4.026	9
Artistry(AR)	3.868	10
Complexity(CP)	3.763	11
Experience(EX)	3.605	12
Historical(HI)	3.459	13

response scales, allowing respondents to answer the degree to which they agree on the presented problem[13].

In this study, a questionnaire was conducted using a scale of 5 steps. It was conducted with a total of 35 researchers currently working on urban regeneration projects, and as shown in Table 5 the average value was derived and rankings were constructed.

In order to secure the credibility of the research results, AHP(Analytic Hierarchy Process) was conducted for each keyword. AHP was developed by Thomas Saaty and it is a method for prioritizing element for multi-criteria decision-making process[14]. Within the results derived through the Likert scale, keywords included in the order of the 10th place were targeted. A total of 10 keywords were classified into two properties of “Spatial & physical properties” and “Content & system properties”. As shown in Table 6, “Spatial & physical properties” consist of three keywords of “Sustainability”, “Publicity”, and “Identity”, and “Content & system properties” are to be “Residential participation”, “Commerciality”, “PR strategy”, “Local government participation”, “Convenience”, “Artistry” and “Locality”.

Table 6. Case Analysis for urban regeneration

Criteria	Sub-criteria
Spatial & Physical Properties	Sustainability
	Publicity
	Identity
Contents & System Properties	Resident participation
	Commerciality
	PR strategy
	Local government participation
	Convenience
	Artistry
	Locality

Also, Table 7 and Table 8 shows the weight for each keyword and consistency ration(CR) came out to be 0.0028 for “Spatial & physical

properties” and 0.098 for “Contents’ and system properties”. And the reliability from both CR came out to be less that 0.1 and showed the reasonable consistency.

Table 7. Spatial & physical properties of urban regeneration

	SU	PU	ID
SU	1	0.985	1.000
PU	1.016	1	1.273
ID	1.000	0.786	1

	SU	PU	ID
Weight	0.331	0.362	0.307
Consistency Index			0.0028

Table 8. Contents & system properties of urban regeneration

	LO	RP	CO	PR	GP	CO	AR
LO	1	0.681	1.231	0.850	1.250	1.406	1.029
RP	1.469	1	1.563	1.000	3.375	1.520	1.000
CO	0.812	0.640	1	0.700	0.818	1.273	1.071
PR	1.176	1.000	1.429	1	0.286	1.086	0.618
GP	0.800	0.296	1.222	3.500	1	0.320	0.914
CO	0.711	0.658	0.786	0.921	3.125	1	2.125
AR	0.971	1.000	0.933	1.619	1.094	0.471	1

	LO	RP	CO	PR	GP	CO	AR
Weight	0.136	0.200	0.115	0.120	0.133	0.169	0.127
Consistency Index						0.0988	

Table 9. Evaluation criteria for design element in urban regeneration

Criteria	Sub-criteria		
	Keyword	Weight	Rank
Spatial & Physical Properties	Sustainability	0.331	2
	Publicity	0.362	1
	Identity	0.307	3
Contents & System Properties	Locality	0.136	3
	Resident participation	0.200	1
	Commerciality	0.115	7
	PR strategy	0.120	6
	Local gov. participation	0.133	4
	Convenience	0.169	2
	Artistry	0.127	5

As a result for AHP analysis, the preference in “Spatial & physical properties” came out in the order of importance to be “Publicity”, “Sustainability”, and “Identity”. Also, the preference in “Contents & system properties” listed more important design element in urban revitalization to be in the order of “Resident participation”, “Convenience”, “Locality”, “Local government participation”, and so on.

## 5. Conclusion

The urban regeneration project is an activity that promotes the economy in underdeveloped commercial or residential areas and maintains urban communities through improvement of living in residential areas[15]. Through this study, various successful cases of urban regeneration at home and abroad and surveys related to urban regeneration in Bongsan Village were collected and analyzed. Key keywords for each case were derived, grouped, and top keywords were created. The 13 top keywords were evaluated using Likert's 5-point scale, and AHP was conducted for the 10 keywords that were finally selected. The final keyword was classified into two properties, “Spatial & physical property” and “Content & system property” according to its properties. It is necessary to present a role as a design guideline for establishing urban regeneration designs in relation to various urban regeneration projects that will become more active in the future through the analysis of preferences of urban regeneration keywords derived through this study.

## REFERENCES

[1] M. J. Song & Y. J. Kim. (2020). A Case study on Urban Regeneration through New-tro Design, Journal of the Korea Institute of Spatial Design, 15(8), 363.

- [2] K. S. Jeon. (2011). Urban Regeneration and Sustainable Growth Strategies in Gwangju Metropolitan City, Journal of the Korean Urban Geographical Society, 14(3), 1.
- [3] K. B. Seok & H. S. Ahn. (2019). A Study on the Urban Regeneration from the Public Design Perspective, The Korea Society of Art & Design, 22(3), 171–173.
- [4] H. S. Han. (2018). Development on Urban Culture Revitalization Scenario with the Utilization of Drone Technology, Design Convergence Study, 17(2),
- [5] Seoul-ro 7017. <http://seoullo7017.co.kr>
- [6] 1913 Songjung Market. <https://1913songjungmarket.modoo.at>
- [7] 798 Art District. <http://www.798district.com>
- [8] Guggenheim Bilbao. <https://en.wikiarquitectura.com/building/guggenheim-bilbao/>
- [9] Superkilen by BIG, Topotek1 and Superflex. <https://www.dezeen.com/2012/10/24/superkilen-park-by-big-topotek1-and-superflex/>
- [10] Smart Klasatama. <https://fiksukalatatama.fi/en/>
- [11] A magical, green walk along Paris's Promenade Plan, <https://www.theguardian.com/travel/2017/jun/07/paris-promenade-plantee-free-elevated-park-walkway-bastille-bois-de-vincennes>
- [12] Granville Island. <https://granvilleisland.com>
- [13] ([https://ko.wikipedia.org/wiki/리커트\\_척도](https://ko.wikipedia.org/wiki/리커트_척도))
- [14] H. S. Han. (2020). Analysis on Preferred Element on Constructing Creative Play Space Design, Journal of Digital Convergence, 18(10), 392. DOI : 10.14400/JDC.2020.18.10.389
- [15] M. S. Kim & J. G. Lee. (2019). A Study on the Relationship Between Citizen Participation and Public Design, Korean Institute of Spatial Design, 7(61), 296.

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