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STRATEGIC PLANNING SCHEMES OF MIXED-USE DEVELOPMENTS TO SUPPORT URBAN REGENERATION IN SOUTH KOREA**JU HYUN LEE, WILLIAM D. SHER, MICHAEL Y. MAK AND MICHAEL J. OSTWALD**School of Architecture and Built Environment
University of Newcastle**ABSTRACT**

Many studies of urban regeneration describe strategic planning schemes based on the experiences of practitioners gleaned from a variety of projects in several cities of the world. Whilst this literature provides a general understanding of strategic planning schemes, none explores what is happening and what is planned to happen in the context of South Korea. Our research framework was designed to present formal strategic planning schemes to support urban regeneration within regional contexts. This paper identifies urban regeneration planning schemes for Mixed-use development (MXD), based on a literature review of Korean refereed papers, and examines planning schemes via an expert survey. The literature survey includes 29 papers published by three major institutes in architecture and urban design in South Korea. In terms of strategic planning, the schemes have the potential to impact on MXD. Various urban development experts participated in the survey, and the data collected reflect consensus about strategic planning schemes in regional contexts. The results generated 41 strategic planning schemes and 12 strategic planning factors via Exploratory Factor Analysis (EFA). The results enable us to explore meaningful directions for the future. This paper provides an understanding of key planning schemes in urban contexts in South Korea as well as of strategic planning for the future MXD projects.

Keywords: Strategic planning, Planning schemes, Urban regeneration, Mixed-use development, Urban contexts.

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1. INTRODUCTION

Strategic approaches for urban regeneration (Carmona, 2009, Jones and Evans, 2006, Steinberg, 2005) aligned with regional contexts are a global research issue. This paper draws on the on-going process of developing built environments in urban contexts. Several researchers (Carmona, 2009, Francos, 2002, Mintzberg, 1994, Rider, 1983, Steinberg, 2005) have described the results and the future directions of urban planning schemes. Even though these studies provide a strategic framework involving an empowered committee or expert group, it is difficult for some stakeholders to understand the variety of planning schemes available and to make consensus decisions for strategic planning. There is thus a need to establish a new strategic approach to investigate strategic planning schemes.

South Korea has the fastest economic growth in the world, unique industrialisation, and urban development. After rapid economic growth, older sections have experienced a decline. Since the introduction of local government in South Korea in 1991, local governments have been keen to construct their own regional images through marketing strategies and new brands. Local governors wish to leave their mark on history through urban developments including the regeneration of regional markets and a new local government office. As a result, many urban regeneration projects have emerged during the last decade in South Korea. Whilst literature provides some understanding of urban regeneration in the world, none explores what is happening and what is planned to happen in the context of South Korea.

Many examples (Gardiner, 1998, Korthals Altes, 2002, Wrigley et al., 2002, Raco, 2003, Hemphill et al., 2004, Kearns and Philo, 1993) of urban regeneration describe urban planning schemes based on the long-term experiences of practitioners gleaned from a variety of projects in the world. By contrast, during the past decade, many MXD projects in South Korea have been constructed to improve the built environments as well as to revitalise social and local culture. This paper argues that MXD is an ideal approach for supporting urban regeneration in South Korea. This paper deals with strategic planning (Carmona, 2009, Mintzberg, 1994) and focuses on a variety of urban planning schemes of MXD in South Korea.

Even though there is much research that addresses strategic planning, there is need for a formal understanding of key planning schemes within urban contexts. This paper presents a formal framework to investigate planning schemes in South Korea. The framework is also designed to provide strategic planning schemes to support urban regeneration. This paper facilitates an understanding of strategic planning in South Korea as well as of consensual strategic planning.

The remainder of this paper is divided into four parts. Section 2 reviews related work and establishes a research framework to investigate strategic planning schemes in South Korea. Section 3 describes the results of a literature survey and classification analysis. Section 4 presents strategic planning schemes based on expert evaluation of extracted planning schemes. Finally, Section 5 concludes with a discussion and an outline of future work.

2. BACKGROUND

2.1. Urban regeneration in South Korea

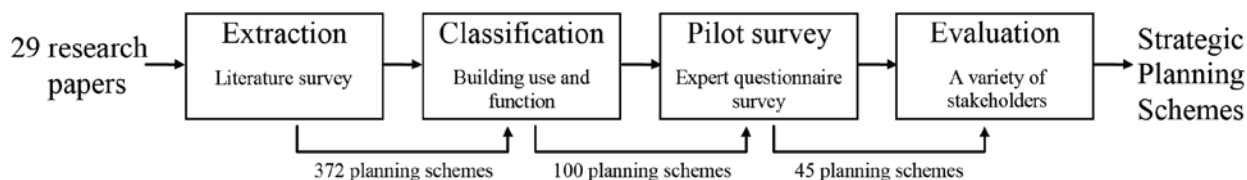
The Korea Urban Renaissance Centre (KURC), launched in 2007, has had a significant effect on urban development in South Korea. KURC describes urban regeneration, using the term urban renaissance, as: (1) the complex alignment of urban infrastructure and buildings to facilitate urban functional regeneration, (2) MXD, including housing, cultural, commercial, and offices for urban communities (social integration), and (3) remodelling cities and revitalisation of attractions (KURC, 2012). MXD should be an approach with the potential to lead urban regeneration in South Korea. This paper describes MXD projects as a series of urban regeneration processes that have occurred during the past decade. The projects aim at both decentralisation and internationalisation and have been referred to as neoliberal urban developments (Lee, 2007).

The ULI (Urban Land Institute) (1976) defines MXD as (1) having three or more significant revenue-producing uses; (2) significant functional and physical integration of project components; (3) development in conformance with a coherent plan. In South Korea, this definition is generally used, and high-rise residential buildings are also included in the domain of MXD. Examples of MXD in South Korea (based on the ULI definition) include Lotte World, COEX, Star City, I-Park Mall and Time Square. These projects have also supported urban regeneration in South Korea.

2.2. Research framework

Parnreiter (2011) highlights a paradigm shift in urban planning from master planning to strategic planning. Strategic planning generates priorities for efficiently allocating resources. Francos (2002) presents a dynamic framework allowing cities to implement their own development decisions. Literature on past urban development projects describes the successes and failures of some well-documented planning schemes (Francos, 2002, Van Marissing et al., 2006, Miles, 2005, Raco, 2003, Balducci et al., 2011, Carmona, 2009). However, it continues to be difficult to identify urban planning schemes available and to various stakeholders to make consensus decisions. To cultivate meaningful planning schemes in the context of South Korea and present consensus planning schemes, this paper presents a framework consisting of a literature survey and expert surveys as shown in Figure 1.

Figure 1: Research framework to develop strategic planning schemes



McSherry et al. (2006) conducted a literature review incorporating a data collection strategy that established the structure for a taxonomy of research in this area. A literature survey provided sources of information for inferential phases of their study. However, its nature may have an ideological and political bias (Tore, 2011) because scholarly works in urban planning may be idealised or focussed on feasible contexts in real projects. Nonetheless, taking a strategic view, literature on planning schemes allows us to explore meaningful directions for the future.

The research framework in Figure 1 is designed to cultivate strategic planning schemes. It starts with a literature survey of 29 research papers. The survey is limited to refereed papers which describe strategic planning schemes in the context of South Korea. This paper does not deal with a wide range of general concerns about urban development, but highlights ideal and even political planning schemes with strategic perspectives. The framework has four stages.

- Extraction: extracting raw planning schemes from 29 Korean research papers dealing with planning schemes of MXD. Three hundred seventy two planning schemes were developed.
- Classification: classifying planning schemes into several groups to delete overlapping planning schemes. One hundred planning schemes were classified by building use and function.
- Pilot Study: evaluating the importance of 100 planning schemes via a pilot survey of experts. After discussing about the results of the pilot study, 45 planning schemes were presented.
- Evaluation: conducting and analysing an expert questionnaire survey with a variety stakeholders to develop strategic planning schemes.

The research framework was designed to present formal strategies and planning schemes based on the literature and an expert survey of urban contexts. The planning schemes surveyed were limited to the research articles identified and thus reflect the variety and nature of stakeholders' concerns recorded by the authors of these papers. However, in terms of strategic planning, the schemes have the potential to impact on MXD in South Korea. Various experts closely related to the urban developments participated in the survey meaning that the research reflects consensus about the strategies and planning schemes in regional contexts. The framework contributes to an understanding of strategic planning schemes of South Korea as well as to developing strategies and planning schemes for the other urban contexts.

3. LITERATURE SURVEY

3.1. Planning schemes from literature

The literature survey includes all the refereed papers relating to MXD that were published between January 2000 and April 2009 in South Korea. This paper used 29 research papers published by three major institutes in architecture and urban design: the Architectural Institute of Korea, the Urban Design Institute of Korea, and Korea Planners Association (See Appendix 1).

Table 1 shows how details of planning schemes were extracted from a short sentence related to planning and/or designing for MXD. Most of the sentences came from the discussion, direction or conclusion sections of the papers. 372 planning schemes from 29 papers were extracted. While about ten planning schemes were extracted from 25 papers, four papers presented over 30 planning schemes. This is because the four papers included a number of literature reviews and focused on planning and design characteristics. Many of the articles reviewed here investigated MXD projects in Seoul (Lim, Ji-Hyoun & Kang, Gun-Hee, 2002, Shim, Dong Seop & Yang, Woo-hyun, 2003, Lee, Seung-Joo et al., 2004, Kim, Chan-ju et al., 2004, etc.). Thus, 372 planning schemes not only represent ideological and political directions, but also present feasible planning schemes in real MXD projects.

Since the articles are co-cited often, these articles may share common ideas as well as present overlapping planning schemes. The next section eliminates the overlapping schemes and narrows them down to a manageable number.

Table 1: Examples of extracting planning schemes from literature

Source (in Appendix 1)	Original description	Extracting planning schemes
Lim, Ji-Hyoun & Kang, Gun-Hee (2002)	<p>Considering <u>physical and functional connections between spatial elements</u>, MXD is designed to <u>coherent master plan</u> and <u>optimising user footpaths</u>.</p> <p>MXD should <u>maximise land use</u> via <u>the seamless connection between spatial elements</u>.</p> <p>Improving the quality of urban spaces results from <u>integrating a variety of functions within spaces</u>.</p>	<ul style="list-style-type: none"> • Physical and functional connection between spatial elements • Coherent master plan • Optimising user footpaths. • maximising land use • Integrating functions within spaces
Kim, Hee-Chul & Chung, Jae-Yong (2007)	<p>The planning for MXD <u>establishes signage identifying spaces</u> and considers <u>access to intermediate spaces</u>.</p> <p>As environmental design including noise, daylight, and shadow, we need to consider <u>space planning for comfort</u>.</p>	<ul style="list-style-type: none"> • Establishment of signage identifying spaces • Access to intermediate spaces • Space planning for comfort
Jung, Yoon Hye & Lee, You Mi (2008)	<p>MXD ensures assess and <u>connection to underground spaces through sunken spaces</u>.</p> <p>Considering the relationships between MXD and urban contexts, planning <u>reflects on the context of regional society, culture, and history</u>.</p>	<ul style="list-style-type: none"> • Connection to underground spaces through sunken spaces • Reflection on the context of regional society, culture, and history

3.2. Classification analysis

Three hundred seventy two planning schemes were categorised into a classification of building use and functional groups to eliminate overlapping schemes. After combining and modifying schemes, we arrived at 100 planning schemes consisting of 64 in the built environment, 22 in open space, and 14 schemes in urban macro environments.

The first category, built environments, is comprised of six subclasses, viz. convenience, comfort, accessibility, publicity, culture & historicity, and art & design. The first three subclasses of convenience, comfort and accessibility deal with basic planning schemes related to built environments. Improving the quality of built environments for convenience and comfort should be basic factors to support ‘place marketing’ (Ashworth & Voogd, 1993; Kearns & Philo, 1993; Ward, 1998). The classification analysis developed 20 planning schemes for categories including *Establishment of convenient facilities* and *Space planning for comfort*. ‘Accessibility’ should also be a basic planning factor which includes a variety of planning schemes which provide access to MXDs.

The last three subclasses in the built environments (publicity, culture & historicity, and art & design) consist of unique planning schemes, especially with a focus on urban regeneration. Publicity (Ashworth and Voogd, 1993, Blakely et al., 1977, Greenberg and Lewis, 2000) is one of the most important visions to successfully achieve urban regeneration. ‘Social planning’ in the category of urban environments also deals with ‘publicity’ in terms of social integration (Blakely et al., 1977, Johnston and Co-operative, 2002, Sarkissian, 1976, Wrigley et al., 2002). ‘Culture & Historicity’ and ‘Art & Design’ are fitting ways of supporting urban regeneration. Planning schemes for cultural regeneration (Masayuki, 2010, Evans, 2005, Kearns and Philo, 1993), and public art and social inclusion (Sharp et al., 2005) should be related to facilitate urban regeneration.

The second category consists of open space, walking space, and transportation in exterior environments. ‘Open space’ and ‘Walking space’ seem to develop planning schemes related to ‘publicity’ in exterior environments, while the subclass of ‘Transportation’ is similar to ‘Accessibility’ in the built environments. The second category presents 22 planning schemes such as *Providing accessibility of open spaces*, *Connecting footpaths to hotels, commercial and cultural functions*, and *Convergence between road as well as railroad and architecture*.

The last category deals with urban environments consisting of urban planning, economic planning, and social planning. The macro planning schemes are closely related to economic productivity (Adair et al., 1999, Tucker, 1980, Lowe, 2005) and social integration. Even though planning schemes are condensed into 100 schemes via the classification analysis, the number remains large and subjective. The next section therefore deals with an evaluation of the planning schemes by experts.

Table 2: Examples of planning schemes in each category

Category	Subclass	Examples of planning schemes
Built environments	Convenience	• Establishment of convenient facilities
	Comfort	• Space planning for comfort
	Accessibility	• Connection to underground spaces through sunken spaces
	Publicity	• Establishment of public spaces in low levels
	Culture & Historicity	• Reflection on the context of regional society, culture, and history
	Art & Design	• Establishment of relationships between art works and a space
Exterior environments	Open space	• Providing accessibility of open spaces
	Walking space	• Connecting footpaths to hotels, commercial and cultural functions
	Transportation	• Convergence between road as well as railroad and architecture
Urban environments	Urban planning	• Coherent master plan
	Economic planning	• Planning basement for growing surrounding markets
	Social planning	• Establishing residents’ identities via enlargement of regional communities

4. EXPERT SURVEY

To evaluate planning schemes derived from literature and to present a manageable number of planning schemes, this paper conducted a questionnaire survey of experts. The survey consists of two evaluation stages viz. a pilot survey and the main version of the survey. This pilot study evaluated 100 planning schemes. These expert respondents had over seven-year experience and were asked to evaluate the importance of the planning schemes using a five-point Likert scale. After discussing the results of the survey with three design experts (with over 20 years' experience) 45 planning schemes were selected.

The process and analysis of the pilot study is similar to the evaluation stage shown in Figure 1, except for the number of planning schemes. This paper therefore highlights the main survey examining the 45 planning schemes to identify suitable planning schemes. The expert evaluation also explores how various stakeholders make consensual decisions.

4.1. Expert evaluation

Target experts

Strategic planning involves a variety stakeholders including government departments and individual organisations (Pasqui, 2011). However, some stakeholders (e.g. chambers of commerce, public) were difficult to survey because they did not have the required knowledge. Experts were thus targeted, with the survey population limited to several groups who understood the planning schemes inherent in MXD.

Two hundred and sixty surveys were delivered in person to 13 senior managers in the Seoul metropolitan government (three departments), academics (one school), major construction firms (seven firms) and architects associations (two firms). Senior managers were trained by one of the authors, and these managers then distributed the survey forms to experts in their departments. The managers collected the completed forms and sent them to us. Construction firms included seven major firms: Hyundai, Samsung, Daewoo, Daerim, GS, SK, Shinyoung Constuction & Engineering Co. Experts in Samoo and Heerim Architects & Engineers also participated in the survey.

Two hundred and thirty-eight responses were collected. The response rate was 90.8 per cent, which is relatively high. This is because senior managers distributed and collected the survey forms at their departments. The research used 206 responses, excluding 32 which were sent to experts lacking in experience or who made unreliable responses. Table 3 shows the general characteristics of the experts involved. Most of them were over thirty years old and were working as developers in construction firms. Approximately half of them had over five-year experience, while the remainder had over ten-year experience.

Table 3: Experts' general characteristics (n = 206)

Characteristics		Number	Percent
Age	Under 30	29	14.1
	31-40	119	47.1
	41-50	58	28.1
Job	Government officer	45	21.8
	Academics	18	8.7
	Developer	120	58.3
Career	5-10	115	55.9
	10-15	55	26.7
	Over 15 years	36	17.5

Scales and measurement

The level of importance of the 45 planning schemes to achieve urban regeneration through MXD was measured using a five-point Likert scale. Experts were asked to evaluate the importance of 45 randomly ordered planning schemes and to provide general questions about respondents' demographics. When conducting the classification analysis in section 3.2, authors realised that planning schemes provided more opportunity for analysis when they are classified according to meaningful categories or visions. The survey therefore includes five urban visions, viz. social integration, sustainability, cultural & historicity, economic productivity, and service convenience.

Research on urban regeneration can be categorised into the following five visions: social integration (Johnston & Co-operative, 2002; Sarkissian, 1976), sustainability (Doughty & Hammond, 2004; Hemphill, Berry, & McGreal, 2004; Kua & Lee, 2002; Natalie, 2011), cultural regeneration (Evans, 2005; Kearns & Philo, 1993; Masayuki, 2010), economic productivity (Adair, Berry, McGreal, Deddis, & Hirst, 1999; Lowe, 2005; Tucker, 1980), and service convenience (Ashworth & Voogd, 1993; Kearns & Philo, 1993; Ward, 1998).

Reliability and validity

Cronbach's coefficient was used for checking the instrument reliability. The reliability of planning schemes is 0.92. A past study (Sharma, 2004) indicates that instruments that achieve this score have strong reliability. The results of correlation analyses on the planning schemes and the visions showed the discriminant validity. Moreover, using factor analysis, the final planning schemes attracted sufficient validity.

The importance of planning schemes

Table 4 shows a ranking of the top 10 items illustrating the importance of planning schemes for urban regeneration through MXD. Three planning schemes have the highest mean value. Space planning and convenience may be described as: *space planning considering comfort*, *systematic connection transportation to internal circulations*, and *strengthening user convenience*. Planning schemes related to open space for publicity also scored highly. The public planning schemes are *amenity as a city park*, *providing openness of open spaces*, and *Promoting public uses of open spaces*.

Even if all the planning schemes have a strategic advantage, there are low-rank schemes such as *providing bicycle roads*, *relationship between art works and a space*, and *convergence between road, railroad and architecture*. The lowly-scored schemes may be suitable for some specific urban contexts.

Table 4: Top 10 Ranks of the importance of planning schemes for MXD

Items of Planning Scheme	Mean Value	SD	Rank
Space planning for comfort	4.17	0.70	1
Systematic connection of transportation to internal circulations	4.17	0.68	1
Strengthening user convenience	4.17	0.76	1
Coherent master plan	4.08	0.90	4
Establishment of pedestrian spaces to enable evacuation and fire-fighting	4.07	0.74	5
Amenity as a city park	4.07	0.77	6
Providing accessibility of open spaces	4.06	0.71	7
Promoting public use of open spaces	4.06	0.75	8
Distinguishing and networking vehicle, pedestrian, and service circulation	4.05	0.79	9
Establishment of convenient facilities	4.03	0.75	10

It is difficult to make generalisations from these results because each ranking of importance varies with urban contexts. The number of planning schemes continues to be large and it is challenging to interpret the results of the expert evaluations as well as present a meaningful discussion of strategic planning. We therefore conducted a factor analysis to further investigate the planning schemes. This is described below followed by a discussion of the correlation between the planning factors and five urban visions.

4.2. Exploratory Factor Analysis

The expert evaluation was not intended to provide a generalised planning scheme for MXD, but to provide a strategic approach for MXD. Forty five planning schemes may provide opportunities to explore to the ways MXD impacts on a variety of urban contexts. To better understand the latent constructs, we conducted an Exploratory Factor Analysis (EFA).

The EFA follows the principal component analysis and varimax rotation used in a Cavusgil and Zou's study (Cavusgil and Zou, 1994) on strategy-performance relationship. Twelve factors extracted from the EFA and the factor labels were used to describe the planning schemes in each factor (planning factor). The Measure of Sampling Adequacy (MSA) by Kaiser-Meyer-Olkin is 0.83, which is high and indicates that the factor analysis is appropriate. The factors in Table 6 explain 63.38 % of all the planning schemes. On completion of the EFA, the following planning schemes were dispensed with: convergence between road as well as railroad and architecture, considering human scale, connection to public facilities, and coherent master plan.

To make meanings consistent for each factor (Cavusgil and Zou, 1994), we examined each factor carefully. Labelling the extracted factors is a considerable challenge as it is difficult for a factor label to retain consistent meanings for all the items included in it. While it is impossible for the labels to represent all planning schemes, the carefully labelled factors benefit from being interpreted and correlated with others. After careful discussions, the labelled planning factors we included were 12 strategic planning factors: Divergence of connection, User convenience, Openness of open space, Cultural reflection, Image promotion, Systematic network, Functional integration, Visual perception, Place making, Aesthetic interest, Amenity of low levels, and Pedestrian usage.

The importance of each planning factor in Table 5 was manipulated by the mean value of the included planning schemes. 'User convenience' is the most important planning factor. Planning schemes related to space planning and convenience also occur with the most important schemes in Table 4. For example, *space planning considering comfort* and *strengthening user convenience* related to 'User convenience'. The second important factor is 'Systematic network' and the third is 'Openness of open space'. These results are consistent with the scores of the importance of each of the planning schemes in Table 4. This implies that the extracted factor can represent each planning scheme in the factor.

Table 5: Importance of 12 strategic planning factors extracted by EFA

Planning Factor	Mean Value	SD	Rank
Divergence of connection	3.85	0.50	7
User convenience	4.06	0.54	1
Openness of open space	3.99	0.61	3
Cultural reflection	3.74	0.63	10
Image promotion	3.90	0.60	5
Systematic network	4.02	0.53	2
Functional integration	3.70	0.56	11
Visual perception	3.76	0.57	9
Regional identity	3.80	0.53	8
Art & design unification	3.62	0.60	12
Amenity of low levels	3.87	0.60	6
Pedestrian usage	3.97	0.57	4

Table 6: Strategic planning factors and planning schemes

Planning factor	Planning Scheme	Scheme- factor Correlati on	Eigenvalue (Cumulative Percent of Variance)
Divergence of connection	Connection to footpaths, green areas and water space	.767	2.68 (6.53)
	Provision of bicycle roads	.639	
	Amenity as a city park	.609	
	Seamless connection within streets	.486	
User convenience	Individuation of streets	.416	2.60 (12.87)
	Establishment of convenient facilities	.733	
	Space planning for comfort	.728	
	Improvement of task convenience	.689	
Openness of open space	Strengthening user convenience	.528	2.47 (18.90)
	Providing accessibility of open spaces	.790	
	Promoting public use of open spaces	.762	
Cultural reflection	Establishment of plazas	.470	2.38 (24.71)
	Establishment of facilities for cultural events	.744	
	Connection to exhibition spaces as public cultural spaces	.691	
Image promotion	Reflection on the context of regional society, culture, and history	.608	2.31 (30.33)
	Consideration of image marketing	.738	
	Bridging between pedestrian space and regional landmarks	.702	
Systematic network	Connection to downtown areas	.529	2.27 (35.87)
	Systematic connection of transportation to internal circulations	.654	
	Population inflow through the establishment of commercial and cultural spaces	.597	
	Required functions of new city as an urban planning phase	.434	
Functional integration	Distinguishing and networking vehicle, pedestrian, and service circulation	.425	2.19 (41.22)
	Integration of vertical programs	.720	
	Integrating functions within spaces	.716	
Visual Perception	Connection with horizontal functions	.470	2.19 (46.56)
	Visual openness at the edge of entrances	.614	
	Symbolic entrances	.605	
	Establishment of signage identifying spaces	.534	
Regional identity	Zoning functions, centring on functional axis	.457	1.96 (51.35)
	Establishing residents' identities through enlargement of regional communities	.749	
	Planning basement for growing surrounding markets	.591	
	Formation of placeness	.433	
Art & design unification	Providing privacy for facilities	.405	1.73 (55.58)
	Design unification of interior spatial components	.763	
	Relationship between art works and a space	.540	
Amenity of low levels	Connecting footpaths to hotels, commercial areas and cultural functions	.428	1.61 (59.51)
	Connection to underground spaces through sunken spaces	.517	
	Establishment and connectivity of public spaces in low levels	.486	
Pedestrian usage	Consideration of day lighting in intermediate spaces	.473	1.59 (63.38)
	Establishment of pedestrian spaces to enable evacuation and fire-fighting	.726	
Dropped schemes from the factors	Connection between facilities through footpaths	.542	
	Convergence between road as well as railroad and architecture		
	Consideration of human scale		
	Connection to public facilities		
	Coherent master plan		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

4.3. Correlation Analysis

The survey was designed to reveal strategic planning schemes for urban regeneration through MXD as well as the relationships between planning schemes and urban visions. Since the number of planning schemes is large, we conducted correlation analysis with 12 strategic planning factors as shown in Table 5. The correlation between them is shown in Table 7. No strong correlation is indicated because most of the planning factors have relationships with all the visions. However, the results present possible connections between items. Since the interpretation must depend on the research purpose, this research highlights the degree of more than a correlation of 0.3 (generally, medium correlation coefficient).

Table 7: Correlations between planning factors and urban visions (n=206)

Planning Factor	Service convenience	Economic productivity	Sustainability	Culture& Historicity	Social Integration
Divergence of connection	-0.059	0.217**	0.240**	<u>0.425**</u>	0.185**
User convenience	<u>0.318**</u>	0.160*	0.028	0.111	0.018
Openness of open space	0.066	0.13	0.164*	<u>0.330**</u>	0.076
Cultural reflection	0.098	0.251**	<u>0.329**</u>	0.295**	0.13
Image promotion	0.253**	0.259**	<u>0.306**</u>	0.128	0.12
Systematic network	0.139*	<u>0.386**</u>	0.203**	0.151*	0.035
Functional integration	0.008	0.165*	0.144*	0.119	0.098
Visual perception	0.180**	<u>0.353**</u>	0.189**	0.221**	0.155*
Regional identity	0.083	<u>0.312**</u>	0.240**	0.244**	0.225**
Art & design unification	0.140*	0.179*	0.121	0.199**	0.160*
Amenity of low levels	0.093	0.233**	0.191**	0.184**	-0.032
Pedestrian usage	0.058	0.190**	0.126	0.108	0.024

** . Correlation is significant at the 0.01 level (2-tailed)

* . Correlation is significant at the 0.05 level (2-tailed)

All the planning factors obviously have an effect on such a vision. This paper, however, presents a strategic approach describing how to effectively make a decision and prioritise strategic planning activities. The correlation provides a guideline for a variety of stakeholders to inform their decision-making. For example, 'Service convenience' has a relationship with the planning factor, 'User convenience'. To achieve 'Service convenience', strategic planning needs to focus on the related planning schemes: *Establishment of convenient facilities, Space planning considering comfort, Improvement of task convenience, and Strengthening user convenience.*

If 'economic productivity' is a priority in MXD, Table 7 indicates that there are three important planning factors that need to be considered, viz. 'Systematic network', 'Visual perception', and 'Place making'. As a subsequent step, the strategic factors may be considered with the related planning schemes shown in Table 6. For example, 'Systematic network' refers to four planning schemes: *Systematic connection transportation to internal circulations, Population inflow through the establishment of commercial and cultural spaces, Concerning required functions of new city as an urban planning phase, and Distinguishing and networking vehicle, pedestrian, and service circulation.*

'Social integration' has a weak relationship with planning factors in Table 7. 'Divergence of connection' and 'Place making' are related factors. While this paper is limited to presenting an efficient correlation of strategic planning factors and the visions, the relationships provide potential to plan strategically for urban regeneration.

5. CONCLUSION

This paper has demonstrated a formal framework for cultivating urban planning schemes and developed 41 strategic planning schemes and 12 strategic planning factors via a literature survey and an expert questionnaire survey. The research framework consisted of four stages, viz. Extraction, Classification, Pilot Study and Evaluation. Since this paper extracted raw planning schemes from 29 Korean research papers, the results are limited to the variety and nature of the stakeholders. However, in terms of strategic planning, 41 strategic planning schemes and 12 factors have the potential to support recommendations for urban regeneration within regional contexts in South Korea. Various experts closely evaluated urban planning schemes to provide strategic planning schemes, which reflects consensus within regional contexts. The framework therefore contributes to the development of strategic planning schemes for South Korea as well as for other urban contexts.

Our two research questions were, firstly, how to cultivate useful planning schemes for MXD in South Korea and, secondly, how to effectively explain strategic planning schemes for the future. Using a series of analyses, we have extended our understanding of how strategic planning schemes for urban regeneration can be formed empirically and explored formally. Finally, strategic planning schemes and factors were presented and verified by Exploratory Factor Analysis (EFA) and correlation analysis. The results imply that the strategic planning factors provide potential for developing strategic planning for MXD to support urban regeneration.

This paper contributes to an understanding of key strategic planning schemes for urban contexts currently in place in South Korea as well as for a formal framework for structuring urban strategic planning for the future. Strategic planning for urban regeneration must represent the relationships between planning schemes or strategic factors and urban visions. The strategic planning schemes also enable us to evaluate and explore current or future MXD projects in South Korea in terms of strategic planning. Future work therefore includes (1) evaluation of MXD projects in South Korea using the strategic planning schemes and factors developed here; (2) further investigation of the correlation results (Table 7), which are not fully explored here due to the limited scope of this paper; and (3) development of strategic planning of MXD to support urban regeneration.

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Appendix 1: Reviewed papers to cultivate planning schemes for MXD in South Korea

Author	Year	Title	Source
Lee, Joo-Hyung Lee, Chon-Ki	2001	A study on the Applicability of District-planning for MXD in New towns	Journal of the Architectural Institute of Korea: Planning and Design (Volume 17, No.12)
Shin, Joong Jin Kim, Hye Young	2002	The Study on the Characteristics of the-large scale MXDs - focus on the publicity of the open space	Journal of the Architectural Institute of Korea: Planning and Design (Volume 18, No.5)
Lee, Sang Ho et al.	2002	A Study on the Publicity Analysis of the inner plaza of Complex Building - through survey of user's satisfaction	Journal of the Architectural Institute of Korea: Planning and Design (Volume 18, No.6)
Lim, Ji-Hyoun Kang, Gun-Hee	2002	A Study on Mixed-Use Development plan as a method to develop Yeong Deung Po district	Proceedings of the Architectural Institute of Korea Conference: Planning and Design
Shim, Dong Seop Yang, Woo-hyun	2003	A Study on the Characteristic of Functional Organization and Spatial Arrangement in Urban Mixed-Use Development - A Case Study of COEX and Central City	Proceedings of the Urban Design Institute of Korea Conference 2003
Lee, Seung-Joo et al.	2004	A study on the integration analysis between mixed use space and its urban street - On the LOTTE WORLD's spatial configuration -	Journal of the Architectural Institute of Korea: Planning and Design (Volume 20, No.2)
Lee, Chon-Ki Lee, Joo-Hyung	2004	A Study on a Choice of Special Functions of the MXD	Journal of Korea Planners Association (Volume 39, No.3)
Kim, Chan-Ju Park, Young-Ki	2004	A Study on the Entrance of Mixed-Use Buildings	Journal of the Architectural Institute of Korea: Planning and Design (Volume 20, No.9)
Kim, Chan-ju et al.	2004	A Study on the Distribution of the Vertical Circulation of Mixed Use Buildings - Focused on Central City -	Proceedings of the Architectural Institute of Korea Conference: Planning and Design (Volume 24, No.2)
Lee Jung-Hyun et al.	2004	A Study on the types and realities of Exhibitions in Office Building - Focus on the Gallery in Ministry of Culture & Tourism Republic of Korea, Seoul	Proceedings of the Architectural Institute of Korea Conference: Planning and Design (Volume 24, No.2)
Jang Kyu Seok et al.	2004	A Study of the New self-sufficiently run City system by the plan of Mixed-Use Development in Centralized Commercial Districts	Proceedings of the Architectural Institute of Korea Conference: Planning and Design (Volume 24, No.2)
Hong, Eun-Kyoung Lee, Jung-Hyung	2005	A Study on the Interpretation of Urban-Architectural System in Mixed-Used Development	Proceedings of the Urban Design Institute of Korea Conference 2005
Lee, Jeong-Soo Song, Yong-Ho	2006	The Architectural Characteristics of the Mixed-Use Buildings and Districts around the Railway Station in Japan	Journal of the Architectural Institute of Korea: Planning and Design (Volume 22, No.11)
Lee, Jung-Hyung Kim, Jin-Wook	2006	A Study on the Planning of the Mixed-Use Complex based on the Urban-Architecture System	Journal of the Architectural Institute of Korea: Planning and Design (Volume 22, No.11)
Kim, Chan-ju Kim, Young-ook	2006	A Study on the Functional Relations in Commercial Mixed-Use Building	Proceedings of the Architectural Institute of Korea Conference 2006 (Volume 26, No.1)
Kim, Hyun-Soo et al.	2007	A Study on Characteristics of the Urban Design for Large-Scale Multi-Use Development Plans	Proceedings of the Korea Planners Association Conference 2007
Lee, Jung-hyun et al.	2007	A Study on the design factors of Mixed-use on waterfronts	Proceedings of the Korea Planners Association Conference 2007
Son, Chang-Woo Chung, Jae-Yong	2007	A Study on the Characteristics of Mixed Use Public Space Development for Urban Regeneration - Focused on the Characteristics of Accommodated Functions -	Proceedings of the Architectural Institute of Korea Conference 2007 (Volume 27, No.1)
Kim, Hee-Chul Chung, Jae-Yong	2007	The Study on the relationship between mixed use development and urban space	Proceedings of the Urban Design Institute of Korea Conference 2007
Lee, Hyo-Chang et al.	2008	A Study on the Characteristics of Architectural Publicity in the Mixed-use Facilities	Journal of the Architectural Institute of Korea: Planning and Design (Volume 24, No.6)
Park, Ah Reum et al.	2008	The Study of on the City Function and Development Characteristics of Large Mixed Use Complex	Proceedings of the Urban Design Institute of Korea Conference 2007
Jung, Sung-Won Lee, Min-Woo	2008	General Characters of Pedestrian Route at Mixed Use Development Building - Focus on I'Park Mall of Yong San-	Proceedings of the Architectural Institute of Korea Conference 2008 (Volume 28, No.1)
Shin, Ji-Hye Shim, Jae-Hyun	2008	A Study on the Characteristics of Multi-Level Circulation Patterns in Mixed-use Buildings	Proceedings of the Architectural Institute of Korea Conference 2008 (Volume 28, No.1)
Jung, Yoon Hye Lee, You Mi	2008	A Study on Spatial Plan of Mediation Space by Analyzing Users' Behaviors of Mixed-Use Complex - Focus on I' Park Mall of Yong San	Proceedings of the Urban Design Institute of Korea Conference 2008
Kim, Hyo Ju et al.	2008	A Study on Characteristic of Intermediate Space in the Large Mixed Use Complex	Proceedings of the Urban Design Institute of Korea Conference 2008
Jung, Ji-Hee et al.	2008	A Study on the spatial interrelation between facilities in mixed-use complex	Proceedings of the Urban Design Institute of Korea Conference 2008
Park, Bok-Kung Han, Gwang-Ya	2008	The Study on the Correlation of Visitors Cognitive and Intermedia Space of Large Mixed-Use Complex - In the case of COEX	Proceedings of the Urban Design Institute of Korea Conference 2008
Lee, Jae-Hoon Chung, Jae-Yong	2009	A study on the Improving Publicity through Open Space of Mixed-use Building - Focused on Mixed-Use Apartment in Seoul	Proceedings of the Urban Design Institute of Korea Conference 2009
Jung, Ji Hee Kim, Yoong Ook	2009	A study on the analysis arrangement method HCI technology application in the mixed-used facility's public space	Proceedings of the Urban Design Institute of Korea Conference 2009