Article

Building a Diagnostic Model for the Development Phase of Gentrification in the Original City Centers of the Provinces in Korea

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Abstract: Recently, gentrification has occurred not only in Seoul, the capital, but also nationwide in Korea. In other countries such as the United States and Europe, it occurs in various areas such as housing, commerce, and culture, but in Korea, it occurs in most commercial areas. In addition, the resulting social problems are also very serious, and the pace of occurrence and progress is also very fast. The present study was conducted on Korean cities, especially local cities where gentrification occurred due to the government’s urban regeneration project. A system was established to analyze the occurrence phenomenon from a supply perspective and a demand perspective, and to synthesize them to predict the stages that proceed when gentrification occurs by period. Through this, it will be possible to observe and predict gentrification phenomena and respond in advance.

Keywords: gentrification; stage prediction; supply-perspective; demand-perspective

1. Introduction

1.1. The Seriousness of Gentrification and Occurrence Problems in Korea

Gentrification is a term that was first used by the British sociologist Ruth Glass (1964) in her study entitled “London: Aspects of Change”. The original concept refers to the phenomenon in which young and relatively wealthy middle- and upper-class residents move into an old and underdeveloped residential area, changing the structure and character of the whole area and also regenerating and activating the declined city from the inside [1]. However, in Korea, gentrification has recently been used as a negative term that refers to the phenomenon in which land values and rents are increased by regional revitalization, squeezing out the original inhabitants who can no longer afford them.

In Korea, gentrification is causing several serious social problems. Gentrification, when studies in the past in countries such as Europe and the United States, was mainly studied in residential areas. However, in Korea, gentrification occurs in a slightly different and special way as shown in Figure 1. It occurs mainly in areas where commerce is concentrated, and even if it occurs in residential areas, it is characterized as a residential area that turns into a commercial area.

The progress of gentrification occurring in Korea is as follows. Excessive land prices and rents lead to unreasonable situations in which small tenants, natives, and self-employed people who contributed to creating regional characteristics are forced to move to other regions. After that, large franchise stores rapidly enter, making the commercial and cultural spaces in the region uniform, the local community collapses and social conflicts deepen. In the long run, the locality and diversity of cities disappear, and sustainability is lost. As rents continue to increase, even large franchises are leaked, and vacancy rates in the central city increase and the region declines again. In the worst case, the streets where individuality has disappeared no longer attract visitors’ attention, and the floating population decreases.
As a result, there is even a paradoxical phenomenon in which it falls into a stagnant area, loses commercial value, and falls into an underdeveloped area.

Figure 1. The current status of gentrification occurring in Korea. (Source: Author editing and Article (http://hyundaenews.com/28372 (accessed on 5 September 2017) http://isplus.live.joins.com/news/article/article.asp?total_id=18713310&ctg=1200&tm=i_lf (accessed on 21 September 2015) [2,3].

A representative example is the Hongdae Art Street in Seoul. The art street in front of Hongik University is an area where busking and indie bands are active, and it is the center and downtown area of art culture with numerous performance halls and shopping centers forming their own unique culture. However, due to the recent rise in rent, performance halls and small business owners have become unable to handle it, and more and more places are currently scheduled to suspend operations. As the characteristic shopping malls and performance halls, that only this area have, are disappearing, it is turning into a general commercial district that loses its personality, and even the music culture representing Hongdae is on the verge of disappearing. As such, gentrification occurring in Korea is not just an individual problem, but a serious aspect that changes the atmosphere of the entire region and has social repercussions.

1.2. Need for a Time-Sequential Diagnostic System

When urban regeneration-related projects are implemented in local cities other than the metropolitan area in Korea, and gentrification occurs accordingly, it is necessary to establish a phenomenon measurement index considering various aspects of complex perspectives. The characteristics and degree of gentrification of each target site differ according to the occurrence of gentrification at each period, such as the initial point of project implementation, the period of progress, and the time of project termination, and it is necessary to establish a quantitative standard definition for each change. In other words, time-series steps should be set based on the derivation of indicators for phenomenon measurement. In the case of gentrification indicator setting studies, most studies are based on the analysis of the characteristics of gentrification, which affects the occurrence of residential gentrification. There are studies on setting indicators for measuring some commercial gentrification. However, it is possible to measure whether gentrification occurs through the derivation of indicators, but at the time after the occurrence, there is a limit that the aspect of extended research by empirical analysis and time-series development has not been achieved.

The gentrification phenomenon is not a short-term change in the urban structure of the event, but a phenomenon in which the unique characteristics of the region continue to change in a series of and gradual trends such as “formation-activation and transition-decrease or expansion”. As gentrification develops, major factors of change appear differently for each period, and the resulting ripple-effect is also different.

To minimize side effects from the occurrence of gentrification and establish an appropriate response direction for each period, stages for time-series change flow must be set to identify quantitative and qualitative changes based on appropriate observation factors at each time point. In other words, it is necessary to establish a diagnostic system that
can identify when the short-term change changes politically and dramatically, classify the steps, and then identify each time point. If a diagnostic system is established, the current stage of the area where the gentrification phenomenon has occurred can be identified, and accordingly, the direction of response establishment suitable for the area can be determined. In addition, it is possible to quantitatively grasp the impact on the region in advance and prepare for the next step. In addition, although gentrification has not occurred at the moment, it is possible to identify the timing and change patterns in advance and prepare for them by substituting them in areas expected to occur in the future.

1.3. Scope and Method

The target areas selected are those areas that have been gentrified among original city centers where government-led urban regeneration projects were carried out. In order to time-sequentially analyze the changes and effects before and after the project, these were limited to areas where it has been at least 10 years since the regeneration project was carried out. Since the causes and course of development of gentrification in residential and commercial areas are different, this study also excluded cases in which residential areas are gentrified, as is the norm in Western society. The main scope of research was limited to the commercialization of residential areas or the commercial gentrification of original city centers. Based on this standard, Gunsan Modern Historical Landscape District, Daegu Bangcheon Market-Kim Gwangseok-gil Street, and Jeonju Hanok Village were selected. All these three areas became tourist attractions after a government-led urban regeneration project was implemented and saw a rapid increase in interest and visits by outsiders. At the same time, the original populations in these areas have been continuously and rapidly decreasing due to the expansion of trade areas. The temporal scope is about 15 years from 2006, the initial point where data for analysis indices such as change in land value and type of business can be obtained, to 2021.

Gentrification is a phenomenon that is affected by various factors, and, thus, must be analyzed from multiple perspectives. Accordingly, this study divided the trend of studies on the cause of gentrification and phenomenon analysis conducted since the concept of gentrification was first mentioned until today into ‘supply perspective’ and ‘demand perspective’ (Figure 2).

![Figure 2. The flow chart of the study.](image-url)
and qualitative changes in commercial facilities in the target site are examined by internal factors, and through this, the stage of change in gentrification is identified. Third, to overcome the limitations of each aspect, we develop a gentrification step that can identify the characteristics of each period by mixing the first and second aspects and identify the characteristics of gentrification unique to Korean local cities. After that, we finally apply this to the three research sites to determine which stage of gentrification each region currently falls under.

2. The Main Research Perspective for Identifying Gentrification: Supply Perspective and Demand Perspective

Discussions on gentrification have continued to develop since the late 1970s, focusing on supply and demand perspectives, and fierce debate has unfolded through critical considerations and refutation of the other perspective as well as the concept establishment of each perspective (Figure 3).

![Figure 3. Changes in gentrification researchers by period.](image)

The supply perspective analyzes the phenomenon of gentrification with an emphasis on the role of supply, such as rent and production based on Marxist economics. In other words, a rent gap is induced as capital is invested by landowners, city planners, bankers, and real estate investors through public and private organizations in charge of finances and government-led public projects and finance in the neighborhoods of city centers that are low-priced and deteriorated but have high potential investment value (Figure 4) [4]. The urban space is reorganized, and as a result, new users with a higher socioeconomic status flow in due to the physical changes in the built environment. This urban space reorganization process can be understood as the ‘supply perspective’.

According to the demand perspective, gentrification is induced not by capital but by people. The demand (consumption) perspective is based on research by David Ley (1980) [6]. Theorists who adopt the demand perspective argue that a rent gap may be a necessary condition for gentrification, but it does not provide sufficient grounds for gentrification; rather, the existence of gentrifiers that cause gentrification takes precedence over the rent gap that occurs in the process of gentrification or gentrified real estate [7].
Figure 4. The rent gap hypothesis. (Source: Author reconstructed it by referring to Smith (1979) [5]).

In other words, from the perspective of the consumers that are the gentrifiers who cause gentrification, characteristics such as their preferences, tastes, and consumption patterns bring change to residential and commercial aspects, which causes change in the urban environment.

The main research contents of each researcher are shown in (Table 1) below.

Table 1. Research contents and overview of researchers in each aspect.

| Researcher          | Supply Perspective | Demand Perspective |
|---------------------|--------------------|--------------------|
| Neil Smith (1979)   |                    |                    |
| Eric Clark (1988)   |                    |                    |
| Daniel Hammel (1999a,b) |                |                    |
| David Ley (1980, 1992, 1994) |            |                    |
| Chris Hamnett (1991, 1993) |          |                    |
| Sharon Zukin (1982, 1987) |              |                    |
| Larry Bourne (1993) |                    |                    |

| Time range of research | 1979 | 1850–1990 | 1950–1970, 1970–1986 | 1960–2001 | 1940–1980 | 1951–1986 |
|------------------------|------|----------|---------------------|----------|----------|----------|
| Research area          | Sweden, Malmo | Six land areas. | USA Nine high-density development areas in the Minneapolis central business district. | Six cities in Canada. (Toronto, Montreal, Vancouver, Ottawa, Edmonton, Halifax). | New towns in the south and west of the U.S. (Dallas, Phoenix), old cities in the eastern USA (Baltimore, Philadelphia, Washington, D.C.), London, England. | Downtown New York, USA. | Eight cities in the Canadian metropolitan area (Toronto, Montreal, Vancouver, Ottawa, Quebec, Hamilton, Halifax, Victoria). |

| Consider the factors of the land price | O | O | O | X | O | O | O |
|---------------------------------------|---|---|---|---|---|---|---|
| Considering population and social characteristics | X | X | X | O | O | O | O |
Table 1. Cont.

| Analysis method | Analysis factor | Supply Perspective | Demand Perspective |
|-----------------|-----------------|--------------------|--------------------|
| Capitalized Zone: The actual size of the land area considered by the landowner. Potential Zone: The size of the zone in conditions that can create the best value to the maximum. | Capitalized Zone: Tax Valuation Amount Potential Zone: Estimating the sales price just before the original development and the sales price just before redevelopment. | The proportion of workers in the fourth industry living in the city center, nuclear families (family composition), education level, construction volume of new houses in the form of condominiums in the city center, and proportion of the English-speaking population. | Economic base, occupational class structure, fluctuations in household income, urban environment, and cultural preferences of the cautious class. |

Potential Zone: The size of the landowner. Capitalized Zone: Tax Valuation Amount Potential Zone: Considering factors such as accessibility to major roads, distance from the metropolitan area, size of the area, population, etc. | Economic base, occupational class structure, fluctuations in household income, urban environment, and cultural preferences of the cautious class. | Gross household income growth rate, changes in income redistribution within each geographical movement of household income growth classes to urban areas, small household ratios, and increased teaching level. |

Gentrification occurs when the rent gap is large enough. | Gentrification occurs when the rent gap is large enough. | A characteristic analysis of gentrifiers/Analysis of changes in the housing market according to the analysis of changes in education level, income, and occupational group. | Analysis of the existence and characteristics of gentrifiers in regions where rent gaps have occurred. |

Gentrification occurred in the area with the largest rent gap and the lowest housing price. | Gentrification occurred when four factors related to supply and demand are met. | Analysis of gentrifier characteristics/Production patterns of urban cultural capital. | Analysis of the degree of distribution of household income levels in the city center by region. |

Nine cities are classified into three types for each flow of change, and the empirical proof of the rent gap theory is proved. | Gentrification occurs due to an increase in cultural copies following the advent of gentrification, and the resulting spatial change. | Gentrification occurs when the distribution of high-income households with a certain amount or more in the city center and the resulting neighborhood environment change. |

| Analysis focus | 3. Target Area |
|----------------|---------------|
| 3.1. Gunsan Modern Historical Landscape District |

The original city center of Gunsan, located in Jeollabuk-do, is a typical city that preserves the original form of an open port city from the Japanese colonial era. Since opening the port in 1899, a joint concession area was established, which led to a great influx of foreigners led by the Japanese. The Port of Gunsan was opened to export rice, which is the main purpose of the open port, and large-scale infrastructures such as port facilities, army roads, and railroads were established. However, as the many Japanese people that had been dominating Gunsan’s economy left after Korea’s liberation in 1945, the port no longer served as an export port for rice. The city’s once active role in finance and distribution also disappeared, bringing the local economy to a halt [8]. The development of new towns also led to the relocation of government offices, which accelerated the decline of the original city center. Gunsan attempted to enhance the city’s value by recovering its modern historical landscape, trying to improve quality of life by socially and economically recovering the original city center. To this end, the city has been seeking ways to preserve and utilize modern buildings. Gunsan carried out the ‘Modern History-Culture Belt Project (2005)’ and ‘Modern Historical Landscape Project (2009)’ to restore the original form of modern buildings and reinvent the interior spaces as cultural spaces, thus creating a modern culture-themed street [9]. Gunsan is now rising as a tourist attraction with the restored modern buildings used as exhibition and cultural complexes, accommodations, restaurants, and cafés (Figure 5).
3.2. Daegu Bangcheon Market·Kim Gwangseok-Gil Street

Located in Daebong 1-dong, Jung-gu, Daegu, Bangcheon Market was founded by people who settled in the area after the liberation in 1945, and grew to host over 1000 vendors [10,11]. Bangcheon Market flourished until the 1970s, but due to the construction of Sincheon-daero in the 1980s, the path used by residents across the Sincheon Stream to enter the market was cut off, and the markets and homes over the embankment were demolished, which led to a crisis [12]. Bangcheon Market ended up rapidly declining in the 1990s with the declining use of traditional markets as well as the establishment of Daegu Department Store Plaza Branch, a large trade area, about 700 m away [13,14].

Now neglected with deteriorated facilities and empty stores, Bangcheon Market began to be used as a creative space for artists in 2009 as the Daegu Art Critics Society adopted the concept of residency. Empty stores were rented out at low fees to about 40 artists in a range of fields, including architecture, Western painting, sculpture, installation, photography, graffiti, and crafts [12,13,15].

The stagnant spaces of Bangcheon Market became filled with many artworks and were open to the public, thereby becoming a new tourist attraction [4]. Based on this achievement, Daegu Bangcheon Market was supported as the ‘Pilot Project to Boost Traditional Markets with Culture’ by the Ministry of Culture, Sports, and Tourism in 2009. Kim Gwangseok-gil Street, which was the second out of three projects, has since become a national tourist attraction. Inspired by the singer Kim Gwangseok, the street features busking and regular performances, and displays murals painted in different themes that constantly change. There are also rows of cultural facilities, restaurants and food vendors, and cafés (Figure 6).
3.3. Jeonju Hanok Village

Jeonju Hanok Village is located in Gyo-dong, Pungnam-dong, and Jeon-dong in Jeonju. It is a hanok village with a community of over 700 hanoks (traditional Korean houses) [16]. When Jeonju was selected as host city for the World Cup in 2002, efforts were made to preserve Korea’s only traditional housing culture and landscape and turn Jeonju into a city of traditional culture [17,18]. Hanok residential facilities, hanok accommodations, cultural facilities like experience centers and museums, and commercial facilities like traditional tea houses and restaurants as well as hanji stores were established.

Along with such physical environmental maintenance, various cultural base facilities are established in Jeonju Hanok Village, and experience contents and cultural performance events are actively held.

The number of tourists visiting Jeonju Hanok Village because of the physical environment improvement, cultural facilities construction, various cultural and artistic content planning, and the formation of commercial districts exceeded 1 million in 2006 and 5.08 million in 2013, and has continued to exceed 10 million since 2016. In addition, it was selected as a star for Korean tourism in 2010, designated as the best attraction for Korean tourism in 2011, selected as a pilot project for local brand globalization by the Ministry of Public Administration and Security in 2012, ranked No. 1 by region in 2017, and won the ‘2019 International Slow City Awards Orange Snail Award’ (Figure 7) [16].

Figure 7. Jeonju research area (Source: Author’s filming and Websites).

4. Analyzing Gentrification from the Supply-Perspective

4.1. Analysis Method and Concept

The supply perspective takes the approach that rent gaps occur in target areas with the inflow of external factors such as urban regeneration projects, which lead to gentrification. In other words, the flow of gentrification was determined by analyzing the change in land value within the target areas, as well as its impact due to the project. The prop-tech (property technology) platform DISCO [19] provided in Korea was used to collect actual transaction price data, and the annual change was analyzed using difference-in-differences (DIDs) analysis from 2006 to 2021. The concept of DID analysis is equivalent to the difference of each graph value (Y_{11} - Y_{01}) - (Y_{10} - Y_{00}) or (Y_{11} - Y_{10}) - (Y_{01} - Y_{00}) in (Figure 8).

i is the area where the urban regeneration project is implemented or not, t is time on the yearly basis, and Y is average actual transaction price in area i at point t.
Figure 8. Conceptual diagram of DID (difference-in-differences).

As shown in Formula (1), Time$_i$ is a dummy variable representing before and after the policy implementation, Treat$_i$ is a dummy variable representing whether the area applies the policy, and (Time$_i$ × Treat$_i$) is the interaction variable.

\[ Y = \beta_0 + \beta_1 \text{Time}_i + \beta_2 \text{Treat}_i + \beta_3 (\text{Time}_i \times \text{Treat}_i) + X + \epsilon \]  

(1)

Moreover, X refers to other control variables, and \( \epsilon \) refers to errors.

This can be applied to the calculation of estimates as shown in Table 2, and the meaning of each variable is as follows.

Table 2. Classification before and after the implementation of urban regeneration policies for each group.

|                  | Pre-Intervetion (t = 0) | Post-Intervetion (t = 1) | Difference       |
|------------------|--------------------------|---------------------------|------------------|
| Control Group    | \( \mathbf{Y}_{00} (\beta_0) \) | \( \mathbf{Y}_{01} (\beta_0 + \beta_1) \) | \( \beta_1 \)   |
| Control Group    | \( \mathbf{Y}_{10} (\beta_0 + \beta_2) \) | \( \mathbf{Y}_{11} (\beta_0 + \beta_1 + \beta_2 + \beta_3) \) | \( \beta_1 + \beta_3 \) |
| Difference       | \( \beta_2 \)            | \( \beta_2 + \beta_3 \)   | \( \beta_3 \)   |

\( \beta_1 \): Time effect before and after urban regeneration project. \( \beta_2 \): Effect of difference between the study target site and the control group area. \( \beta_1 + \beta_3 \): Time Effect + Effect of Urban Regeneration Project Implementation. \( \beta_3 \): Effect of regional + effect of urban regeneration project implementation.

\( \beta_2 \) is the land value gap between the target area and comparison area before the urban regeneration project, \( \beta_1 \) is the land value gap of the comparison area before and after the urban regeneration project, \( \beta_1 + \beta_3 \) is the land value gap of the target area before and after the urban regeneration project, and \( \beta_3 \) is the land value gap between the target area and comparison area before and after the urban regeneration project.

In other words, the ‘pure effect’ of the policy can be verified by \( \beta_3 \), the interaction term of time and group variables [20,21].

4.2. Gentrification Phases in the Original City Centers of the Provinces from the Supply Perspective

The changes due to measurement indicators from the supply perspective for each target area are as shown in (Table 3), and the phases of the development process for gentrification are as shown in (Table 4).
Gentrification that occurs in original city centers of the provinces can be divided into four phases from the supply perspective.

Phase 1 is when the land value increase in the target areas is very low, and the average land value of the control group with a similar physical environment increases. In other words, it is when the target area shows the character of a typical deteriorated original city center.

Phase 2 is when the inflow of external factors such as the urban regeneration project begins within the target area, and at the same time, the land value increases, which results in the increase of the DID coefficient. Gunsan shows a difference in the level of change compared to Phase 1, but it is not to be defined as Phase 2 equally with Daegu and Jeonju, since it is not in the phase where the land value increases according to the aforementioned criteria. On the other hand, Daegu and Jeonju are starting to show a remarkable change in land value due to the government-led project. In other words, the land value change in the target areas shows a difference from the point at which the project is implemented. Thus, it is the starting point that requires attention in relation to the occurrence of gentrification in this phase.

Phase 3 is when there is a greater increase starting with the change in Phase 2. Compared to Daegu and Jeonju, this phase is actually Phase 2 for Gunsan. Daegu and Jeonju show a constant rise in DID coefficients compared to Phase 2, which is because the land value increase of the target areas increased the coefficients, in contrast with the increase of the control group in Phase 1. For both areas, Phase 3 is when government-led projects are being continuously implemented, which leads to full-scale gentrification.

Table 3. Changes in technical statistics and DID coefficients in Gunsan, Daegu, and Jeonju by year.

| Change by year in Gunsan | Change by year in Daegu | Change by year in Jeonju |
|--------------------------|-------------------------|-------------------------|
|                          |                         |                         |
|                          |                         |                         |

Gusun DID data change result
Daegu DID data change result
Jeonju DID data change result
Table 4. From a supply point of view, the gentrification progress stage for each area.

| Site Gentrification Stage | Gunsan | Site Gentrification Stage | Daegu | Jeonju |
|---------------------------|--------|---------------------------|-------|--------|
| 1                         | ‘2006–2007’~’2010–2011’ | ‘2006–2007’~’2008–2009’ | Gradually increasing the value of the DID coefficient | The land price of the research target site is low |
|                           | Up to 5.5 percent increase in DID coefficient | Up to 5.6 percent higher coefficient of DID | A study on the site of the land below | |
|                           | The land price of the research target site is slowly rising | | | |
| 1-1                       | ‘2010–2011’~’2013–2014’ | ‘2009–2010’~’2013–2014’ | ‘2008–2009’~’2012–2013’ | Continues an upward trend of the coefficient of DID |
|                           | Up to 11.1% increase in DID coefficient | Starting in 2011, the value of the DID coefficient is increasing | | |
| 2                         | ‘2013–2014’~’2015–2016’ | ‘2013–2014’~’2016–2017’ | ‘2013–2014’~’2014–2016’ | Average land Price of the site rises rapidly |
|                           | In a short period of time, the value of the DID coefficient decreases rapidly | The increase in DID coefficient value is high | | |
|                           | The land price of the research target site has risen sharply | Continuous rise in land prices of research sites | | |
| 3                         | ‘2016–2017’~’2019–2020’ | ‘2016–2017’~’2019–2020’ | ‘2016–2017’~’2019–2020’ | Changes in average land price and DID coefficient values |
|                           | Average land price and DID coefficient value increase or decrease flexibly | The average land price in the site dropped increase controls, but rise | Both the target area and the control area are decreasing, but the trend of decreasing the target area is further strengthened | |

Phase 4 is when the pattern of change in land value varies among target areas. This is due to the different details and types of projects carried out within the areas, along with their geographic and environmental characteristics. In other words, after the overheated phase of gentrification, there is a need for management and measures that consider the characteristics of each area. Gunsan shows a similar pattern here to other areas in Phase 3, showing a constant increase in land value, whereas the annual change in average land value and DID coefficients is somewhat flexible.

Daegu and Jeonju are showing a decrease in the upward trend of the average land value and DID coefficients compared to the rapid increase in Phase 3, through which the land value change is being reversed in Phase 4.

5. Analyzing Gentrification from the Demand-Perspective
5.1. Analysis Method and Concept

The demand perspective focuses on the fact that the formation of activated trade areas within the target areas attracts more visitors and consumers and changes the characteristics of the trade areas, which is a different approach from the supply perspective in which the change in land value of the target areas is induced by the inflow of external factors, through which the characteristics of the target areas change. For commercial gentrification, merchants flowing into the target areas serve as gentrifiers. Thus, to analyze the changes in the target areas brought about by gentrifiers, it is important to identify the characteristics of each agent. Unlike residential areas, the key indicator for commercial areas is to analyze the
changes in stores of those areas brought about by merchants rather than the characteristics of the merchants.

For gentrification that occurs in the original city centers of the provinces, changes in density and type in limited areas serve as the main factors. Therefore, this study used ‘business opening and closure indices’ as the factor to measure the change in density, ‘change in type of business’ as the factor to identify the change in characteristics of the trade area, and ‘business period of the type of business (retention period)’ in terms of change in period, using these factors as the indicators to derive the phases of gentrification from the demand perspective. To facilitate a quantitative comparative analysis of business opening and closure status in each area, this study converted it into business opening and closure indices for analysis. In other words, business opening and closure indices are for quantitative comparison of stores, with the business opening index representing the number of stores opening per 10 stores in business, and the business closure index representing the number of stores closing per 10 stores in business [22].

- Business opening index = the number of stores opening per 10 stores in business
- Business closure index = the number of stores closing per 10 stores in business

The decrease in business period indicates that there is a rapid change in businesses with the vitalization of the trade area. Therefore, these indices can be identified as the major signs of the process of gentrification [23].

From this perspective, this study examines the component ratio of industry types of businesses opening and closing when the business opening and closure indices in each target area are increasing and analyzes the impact of the increase and decrease in the rate of business closures when certain types of businesses are expanded and concentrated.

In other words, unlike general trade areas where the rate of business closures decreases after forming an integrated trade area, if the rate of business closures increases, the reten-tivity of business and maturity of the trade area decrease, which results in gentrification.

The number of stores opening and closing was determined based on ‘Store History Analysis’ of the trade area information system [12] provided by Small Enterprise and Market Service. ‘Store History Analysis’ shows the name of each store in the land lot, open date, close date, and type of business, as shown in Figure 9.

Figure 9. Store history data provided by the commercial district information system.

5.2. Gentrification Phases in the Original City Centers of the Provinces from the Demand Perspective

The phases of gentrification from the demand perspective in each area are as shown in Tables 5 and 6 below.
Table 5. From a demand point of view, the stage of gentrification for each area.

| Site Gentrification Stage | Gunsan | Daegu | Jeonju |
|---------------------------|--------|-------|--------|
| 1                         | 2006–2012<br>The opening index rose sharply to 0.5 → 1.44, for a short period of time. Index value of 1 or more appears. | 2006–2011<br>Both the opening index and the closing index declined below 1, showing a pattern of the original city center. | 2006–2012<br>Accelerating the rise of the opening index in the target site along with the environmental maintenance project. |
| 2                         | 2013–2015<br>The time when both the opening rate and the closing rate rise (a large number of industries inflow and outflow). The integration of certain industries begins. | 2012–2015<br>At a specific point in time, the opening/closing business index rises to a value of 1 or more, and the range of change appears fluidly. Accelerating the integration of specific industries. | 2013–2016<br>The upward trend of the business opening index is maintained. Expanding tourist attractions due to the integration of specific industries. |
| 3                         | 2016–2017<br>It turns into a downward trend. Both the opening and closing indices indicate negative values. The closure index surpasses the opening index. | 2016–2017<br>A time when the industry changes actively. The size of the relevant commercial district continues to expand due to the active opening and closing of the lodging and restaurant businesses. | 2016–2017<br>The opening index continues to rise, and the closing index is on the decline. The size of the commercial district is shrinking. |
| 4                         | 2018–2021<br>The opening and closing index sharply decreased to a value of 0–0.5. The opening and closing business index also showed a similar pattern to the time before the implementation of the urban regeneration project. | 2018–2021<br>Accelerating the reduction of commercial districts. The decline of commercial districts began due to the rapid increase in the closure of lodging and restaurant businesses. | 2018–2021<br>Accelerating the reduction of commercial districts. The decline of commercial districts began due to the rapid increase in the closure of lodging and restaurant businesses. |

Phase 1 is when the changes rapidly increase in all three areas at a certain point, with gentrification accelerated radically instead of gradually. This shows that, as government-led projects are carried out in all three areas, there is greater fluidity in the characteristics and compositions of trade areas.

Phase 2 is when trade areas are actively replaced and changed due to the increase in the rates both of business opening and closing. Moreover, the ratio of certain types of businesses (lodging and restaurants) is increasing remarkably in the trade areas during this period.

In Phase 3, each area begins to show different forms. Gunsan is showing a dramatic decline in its trade areas. Both business opening and closure indices are decreasing, and the business closure index is surpassing the business opening index. On the other hand, Daegu and Jeonju are still showing active change in types of business, and the scale is also increasing compared to Phase 2.

Phase 4 is when there is a decrease in trade areas in all three target areas. As there is no more inflow of external factors such as government-led projects, the boost of the trade areas is not maintained by itself.
### Table 6. Changes in opening and closing business rates by year in all industries and integrated industries.

| Changes in the Opening and Closing Rates of all Industries in Gunsan | Changes in the Opening and Closing Rates of all Industries in Daegu | Changes in the Opening and Closing Rates of all Industries in Jeonju |
|---|---|---|
| ![Graph](image1) | ![Graph](image2) | ![Graph](image3) |

| Changes in the Opening and Closing Rates of Integrated Industries (Accommodation, Restaurant) in Gunsan | Changes in the Opening and Closing Rates of Integrated Industries (Accommodation, Restaurant) in Daegu | Changes in the Opening and Closing Rates of Integrated Industries (Accommodation, Restaurant) in Jeonju |
|---|---|---|
| ![Graph](image4) | ![Graph](image5) | ![Graph](image6) |

### 6. Establishing the Phases of Gentrification in Original City Centers of the Provinces Overall

This study comprehensively analyzed the patterns of time-sequential change in actual transaction price (analysis factor from the supply perspective) and business opening and closure indices or types of business and integrated trade areas as well as survival rates of trade areas (analysis factors from the demand perspective), thereby distinguishing each phase of gentrification that occurs in the original city centers of the provinces and identifying its characteristics.

#### 6.1. Establishing the Phases and Analyzing the Characteristics

Gentrification can be classified into a total of five phases: preparation phase, Phase 1, Phase 2, Phase 3, and Phase 4. The progress of gentrification occurs in phases 1 through 4. Each phase is described in Table 7 below, and the definition of each is as follows.

The preparation phase is when the occurrence of gentrification is expected, before there is a rent gap.

Phase 1 is when gentrification occurs, and the index numbers of both supply and demand perspectives are increasing. Phase 2 is when gentrification is developed, which is defined as the point at which both supply and demand perspectives change, but a different pattern of change from Phase 2 is shown in the demand perspective. Phase 3 is when gentrification is intensified, and the variations of supply and demand perspectives are maximized. Phase 4 is when gentrification declines, and both supply and demand perspectives decrease.
Table 7. The phases of gentrification.

| Phase                        | Population         | Supply Aspect                                           | Demand Aspect                                                                 |
|------------------------------|--------------------|--------------------------------------------------------|-------------------------------------------------------------------------------|
| Preliminary stage            |                    | Rent gap occurs: changes in the flow of the DID coefficient [13]. | -                                                                             |
| Phase 1 (Gentrification stage)| −20% compared to   | Increase or decrease in DID coefficient occurs.         | Opening index of 1 or higher. It is above the window closure index.           |
|                              | the standard       | The rate of change is 5% or higher.                     | (Opening index > Closing index)                                               |
| Phase 2 (Gentrification      | −40% compared to   | Increase or decrease in DID coefficient occurs.         | Opening index and closing index                                              |
| development stage)           | the standard       | Change rate of 5–15% or higher.                         | of 1 or higher.                                                              |
|                              |                    |                                                        | The window closing index is below 0.                                         |
|                              |                    |                                                        | (Closing index > Opening index)                                               |
| Phase 3 (Advanced gentrification) | −50% compared to the standard | Increase or decrease in DID coefficient occurs. | Opening index, closing index below 1.                                        |
|                              |                    | Decrease in the rate of change.                         | The window closing index is below 0.5.                                       |
| Phase 4 (Gentrification decline stage) | −50% compared to the standard | Increase or decrease in DID coefficient occurs. | Opening index is below 0.5.                                                   |
|                              |                    | Continuous decline in the rate of change.               | Closing index of 2 or higher.                                                |
|                              |                    |                                                        | The window closure index is −2 or lower.                                     |

For step setting for each perspective, the change in indicators in previous studies and the degree of regional change accordingly were referenced.

Supply perspectives (Jeong Soo-yeon, Park Heon-soo (2003), Lee Young-hwan (2008), Park Sang-kyu, Kim Chang-seok (2009), Kang Ho-je, Jeon Myung-jin (2010), Kim Dae-won, Yoo Jung-seok (2014), Hwang Kwan-seok, Park Cheol-sung (2015), Kim Seung-mi (2018), Kim Jin-ji (2019), and Kim Nan-young (2019) constitute a social environment [24–35].

From a demand point of view (Kim Bum-sik (2013), Ryu Jun-young (2013), Kim Jin-kyung, Son Yong-hoon, Lee Jae-joon (2015), Kim Shin-sung (2016), Jung Dong-kyu (2017), Yoo Kyung-hoon (2017), Kang Hyun-mo, Lee Sang-kyung (2018), Lee Jung-ran, Choi Mak-joong (2018), Je Seung-wook, Kim Seung-geun, 18; 18) Kim Hyung-shin (2020), Moon Chang-yong (2020), and Kim Jong-sung (2020) referenced the degree and ripple effect of the degree of change in the industry in the region changing the characteristics of the target site [26,36–55].

6.2. Gentrification Phase of Each Target Area

The results of the analysis by applying the progress stage of gentrification for the three regions are as follows (Table 8).
Table 8. Current status of gentrification progress in each region where the developed model has been applied.

| Gusan Project Implementation Time | Compared to the Standard * Population Change Rate (%) | Supply Side | Demand Side | Phase of Gentrification |
|----------------------------------|-----------------------------------------------------|-------------|-------------|-------------------------|
|                                  | Room Rate of Change in Unit Price of Real Trading Price (%) | DID Coefficient Change Rate (%) | Opening Index | Closing Index | Opening-Closing Index | Industry I's Opening Index | Industry I's Closing Index | Industry I's Opening-Closing Index |
| 2006                             | -43.7                                               | -0.19       | 0.27        | 0.05         | 0.22                   | 0.43                     | 0.14                     | 0.28                     |
| 2007                             | -9.0                                                | 0.15        | 0.14        | 0.05         | 0.09                   | 0.26                     | 0.11                     | 0.15                     |
| 2008                             | -9.0                                                | 0.05        | 0.17        | 0.04         | 0.14                   | 0.31                     | 0.13                     | 0.19                     |
| 2009                             | 0.0                                                 | -0.09       | 0.09        | 0.03         | 0.06                   | 0.2                      | 0.03                     | 0.17                     |
| 2010                             | 1                                                   | 0.01        | 0.17        | 0.09         | 0.08                   | 0.2                      | 0.2                      | 0                       |
| 2011                             | 2                                                   | 0.01        | 0.21        | 0.18         | 0.03                   | 0.13                     | 0.55                     | -0.42                    |
| 2012                             | 3                                                   | 0.01        | 1.44        | 0.23         | 1.2                    | 0.65                     | 0.56                     | 0.09                     |
| 2013                             | 4                                                   | -13.7       | 0.01        | 0.55         | 0.58                   | -0.04                    | 0.88                     | 0.95                     | -0.06                   |
| 2014                             | 5                                                   | -17.1       | -0.12       | 0.72         | 0.74                   | -0.02                    | 1.42                     | 1.06                     | 0.36                     |
| 2015                             | 6                                                   | -21.2       | -0.02       | 1.66         | 0.41                   | 1.25                     | 2.42                     | 0.74                     | 1.68                     |
| 2016                             | 7                                                   | -26.2       | -0.04       | 0.51         | 1.11                   | -0.61                    | 0.77                     | 0.97                     | -0.2                     |
| 2017                             | 8                                                   | -28.5       | 0.03        | 0.83         | 0.34                   | 0.49                     | 1.54                     | 0.65                     | 0.89                     |
| 2018                             | 9                                                   | -31.1       | -0.10       | 0.36         | 0.15                   | 0.21                     | 0.5                      | 0.28                     | 0.23                     |
| 2019                             | 10                                                  | -34.8       | -0.10       | 0.3          | 0.12                   | 0.18                     | 0.66                     | 0.21                     | 0.45                     |
| 2020                             | 11                                                  | -37.4       | -0.05       | 0.2          | 1.09                   | -0.89                    | 0.32                     | 2.25                     | -1.94                    |
| 2021                             | 12                                                  | -42.5       | 0.03        | 0.03         | 0                      | 0.05                     | 0.05                     | 0                       |

* Criteria: When the number of residents begins to decrease
<Execution project in the target site(Gusan)>
1 Art Creation Belt Project (2009–2011)
2 Stage 1 of the Modern Cultural City Creation Project (2009–2019)
3 Wolmyeong-dong Urban Regeneration Project (2014–2016)
4 Stage 2 of the Modern Cultural City Creation Project (2009–2019)
5 Modern History and Culture Space Rehabilitation Project (2019–2023).
Table 8. Cont.

| Daegu | Project Implementation Time | Supply Side | Demand Side |
|-------|-----------------------------|-------------|-------------|
|       |                             | Rate of Change in Unit Price of Real Trading Price (%) | DID Coefficient Change Rate (%) | Opening Index | Closing Index | Opening-Closing Index | Industry I's Opening Index | Industry I's Closing Index | Industry I's Opening-Closing Index | Phase of Gentrification |
| 2006  |                             | 0.11        | 0.01        | 0.1         | 0.18        | 0.00          | 0.18                   | Preliminary               |                              |                              |                        |
| 2007  |                             | −17.10      | 0.16        | 0.06        | 0.1         | 0.24        | 0.00          | 0.24                   |                              |                              |                        |
| 2008  |                             | −5.50       | 0.14        | 0.01        | 0.13        | 0.25        | 0.00          | 0.25                   |                              |                              |                        |
| 2009  | 1 □□ □□ □ □□ □□ □□ □□ □□ □□ □□ | 16.40       | 1           | 0.17        | 0.09        | 0.24        | 0.06          | 0.18                   |                              |                              |                        |
| 2010  | 2 □□ □ □□ □□ □□ □ □□ □□ □□ □□ □□ | 3.30        | −2          | 0.25        | 0.07        | 0.18        | 0.19          | 0.19                   |                              |                              |                        |
| 2011  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ | 12.20       | −1          | 0.23        | 0.06        | 0.17        | 0.38          | 0.00                   |                              |                              |                        |
| 2012  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | −2.90       | 1           | 1.55        | 0.18        | 1.37        | 0.56          | 0.50                   | 0.06                   |                              |                        |
| 2013  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 6.80        | 1           | 0.55        | 0.7         | −0.15       | 1.03          | 0.74                   | 0.29                   |                              |                        |
| 2014  | □□ □ □□ □□ □□ □ □□ □□ □□ □□ □□ □□ □□ | 5.80        | 2           | 0.62        | 0.54        | 0.09        | 1.64          | 0.58                   | 1.06                   |                              |                        |
| 2015  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 18.20       | 1           | 1.09        | 0.3         | 0.79        | 1.62          | 0.46                   | 1.16                   |                              |                        |
| 2016  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 15.30       | 0           | 0.44        | 0.72        | −0.28       | 1.47          | 0.41                   | 1.06                   |                              |                        |
| 2017  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 2.40        | 1           | 0.86        | 0.46        | 0.39        | 1.98          | 1.05                   | 0.93                   |                              |                        |
| 2018  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 15.10       | −2          | 0.16        | 0.07        | 0.09        | 0.50          | 0.15                   | 0.35                   |                              |                        |
| 2019  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 7.40        | 0           | 0.26        | 0.1         | 0.16        | 0.85          | 0.20                   | 0.65                   |                              |                        |
| 2020  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | −1.50       | 3           | 0.25        | 0.61        | −0.36       | 0.61          | 1.18                   | −0.57                  |                              |                        |
| 2021  | □□ □□ □□ □□ □□ □□ □□ □ □□ □□ □□ □□ □□ | 0.05        | 0           | 0.05        | 0.05        | 0.24        | 0.00          | 0.24                   |                        |                              |                        |

<Execution project in the target site(Daegu)>
① Bangcheon Market, Byeol-Byeol-Market Project (2009)
② Bangcheon Market 1st Project (2009–2010)
③ Bangcheon Market 2nd Project (2010–2011)
④ Daegu Modern-Alley-Tourism-Promotion Project (2012)
⑤ Daegu Modern-Alley-Tourism-Promotion Project (2013)
⑥ Urban Tourism Promotion Project (2013)
⑦ Kim-Kwang-Sook’s ReDrawing Way Project (2013-).
Table 8. Cont.

| Jeonju Project Implementation Time | Compared to the Standard Population Change Rate (%) | Supply Side | Demand Side | Phase of Gentrification |
|----------------------------------|-----------------------------------------------|-------------|-------------|------------------------|
|                                  | Rate of Change in Unit Price of Real Trading Price (%) | DID Coefficient Change Rate (%) | Opening Index | Closing Index | Opening-Closing Index | Industry I's Opening Index | Industry I's Closing Index | Industry I's Opening-Closing Index |
| 2006                             | 0.00                                          | 0.13        | 0.02        | 0.12        | 0.29        | 0.06        | 0.24        | Preliminary                   |
| 2007                             | −8.10                                         | −32.00      | 0.19        | 0.07        | 0.12        | 0.94        | 0.32        | 0.61                         |
| 2008                             | −8.80                                         | −13.70      | 4           | 0.24        | 0.04        | 0.2         | 0.62        | 0.18                         | 0.44                         |
| 2009                             | −11.80                                        | 23.50       | 2           | 0.26        | 0.05        | 0.21        | 0.81        | 0.09                         | 0.72                         |
| 2010                             | −17.10                                        | 23.20       | −4          | 0.46        | 0.12        | 0.34        | 1.4         | 0.43                         | 0.97                         |
| 2011                             | −20.10                                        | 24.70       | 5           | 0.34        | 0.08        | 0.27        | 0.97        | 0.24                         | 0.73                         |
| 2012                             | −25.50                                        | 6.60        | 0           | 2.76        | 0.25        | 2.52        | 1.95        | 0.75                         | 1.2                          |
| 2013                             | −29.00                                        | 22.60       | 2           | 0.75        | 0.45        | 0.29        | 1.38        | 0.85                         | 0.53                         |
| 2014                             | −33.70                                        | 4.40        | −1          | 1.35        | 0.90        | 0.45        | 2.31        | 0.97                         | 1.34                         |
| 2015                             | −39.60                                        | 8.90        | 0           | 2.92        | 0.62        | 2.3         | 4.23        | 1.03                         | 3.2                          |
| 2016                             | −42.30                                        | 27.90       | 1           | 0.82        | 1.68        | −0.87       | 1.61        | 1.56                         | 0.05                         |
| 2017                             | −45.30                                        | −16.90      | −2          | 0.93        | 1.46        | −0.52       | 1.67        | 2.36                         | −0.69                        |
| 2018                             | −47.50                                        | −3.60       | 3           | 0.28        | 0.27        | 0.01        | 0.62        | 0.52                         | 0.11                         |
| 2019                             | −51.50                                        | −12.20      | −2          | 0.2         | 0.20        | 0.01        | 0.44        | 0.42                         | 0.01                         |
| 2020                             | −54.00                                        | −11.80      | −1          | 0.38        | 2.21        | −1.83       | 0.45        | 4.75                         | −4.3                         |

* Criteria: When the number of residents begins to decrease
<Execution project in the target site [Jeonju]>
1️⃣ Project of the Model Street for a Signboard (2007–2009)
2️⃣ Making Livable City Project (2007–2015)
3️⃣ Civil Movement for the Traditional Korean Culture-Based City, Jeonju (2007–2026)
4️⃣ Hanok Support Business (2010)
5️⃣ Selection of pilot project for globalization of local brands (2012–2014)
6️⃣ Antique street Regeneration Project (2017–2020)
7️⃣ Pedestrian Environment Improvement Project.
(1) The flow of gentrification occurrence at the Gunsan research target site

Excluding the preliminary stage, it was found that a total of two stages were in progress.

1 Preliminary stage: Period from 2006 to 2011
From 2009, when the number of residents began to decline, it continued to decline. Along with a 23% increase in the actual transaction unit price, it can be seen that the DID coefficient value shows a fluid increase or decrease, and there is no change in terms of opening and closing.

2 Stage 1: Period from 2012 to 2016
The DID coefficient shows a value of −3–3% (change within 5%), and the total business opening index is 1 or more (1.44 and 1.66), and the opening/closing business index is 1.2 and 1.25, which are (+) values. The opening index of the I industry is 1 or more (1.42 and 2.42), and the opening and closing index accordingly appears to be 1.68, which is a positive (+) value. This is the time after the “art creation belt project” was completed, and it can be seen that both land prices and commercial districts have changed due to projects that have been intensively developed in the target site.

3 Stage 2: Period from 2017 to 2021
The number of residents tends to decrease by up to 26% compared to 2009, and the DID coefficient shows a change of −2 to 5%. The total business opening index is 1 or less and the closure index is 1 or more (1.09), resulting in a value of −0.89 in the opening and closing index. The opening index of the I industry is 1 or more (1.54) and the closing index is 1 or more (2.25), and the opening and closing index is −1.94 accordingly. In this period, it can be seen that the reduction in land prices and commercial districts is accelerating compared to the first stage of gentrification, although the second stage of the modern cultural city development project is being implemented and the new rehabilitation project is being implemented.

(2) The flow of gentrification in the Daegu research target site

Excluding the preliminary stage, a total of two stages are shown.

1 Preliminary stage: Period from 2006 to 2011
The rate of change in the DID coefficient is −2~5%, showing an increase or decrease, resulting in a rent gap. It can be seen that the pattern of change in the opening and closing index is low.

2 Stage 1: Period from 2012 to 2017
The rate of change in the DID coefficient is 1 to 3% (change within 5%), showing a (+) trend compared to the preliminary stage. The opening and closing index of all businesses shows a value of 1 or more (1.55, 1.09), and accordingly, the opening and closing index is 1.37, which is a positive (+) value. The opening index of the I industry also increases the frequency of showing values of 1 or more (1.03, 1.64, 1.54, 2.47, and 1.98), and accordingly, the opening and closing index appears to be 1.06, 1.16, and 1.06, which are (+) values. During this period, it can be seen that gentrification in the target site began in earnest from 2013 when the Kim Kwang-seok Redrawing Road Project and the Daegu Modern Alley Tourism Promotion Project began to be promoted in earnest after the Munjeonseongsii project was completed.

3 Stage 2: Period from 2018 to 2021
The rate of change in the DID coefficient is −2–3%, which is similar to the first stage, but the range of increase or decrease per year is larger than that of the first stage, resulting in a different pattern of occurrence of the zone gap. There is no significant change in the opening index of all businesses, but the closing index is more than 1 (1.18), compared to the low change in the opening index of the I industry, and the closing index is −0.57, which is the time when the closing index rises. In other words, it can be seen that although government-led urban regeneration and revitalization-related projects are continuously underway, the commercial districts of the target site are developing in the form of reduced
commercial districts, showing different patterns from the initial project implementation intention.

(3) The flow of gentrification in Jeonju research target site.

Excluding the preliminary stage, it is judged that a total of four stages have progressed.

1⃝ Preliminary stage: Period from 2006 to 2010
A continuous decrease in the number of residents occurs, and a decrease to −17.1% occurs from 2006, the initial decline.

2⃝ Stage 1 (occurrence stage): Period from 2010 to 2013
The continuous decrease in the number of residents is maintained, and the figure is −29.0%, and it can be seen that the decrease is also larger than in the preliminary stage. The rate of change in the DID coefficient shows a value of −4 to 5% (within 5%), which is a time when the decrease and increase are repeated. The overall business opening index shows a value of 1 or more (2.76), and the opening and closing index accordingly represents a positive (+) value of 2.52. The opening index of the I industry also showed more than 1 (1.95, 1.38), and the opening and closing index accordingly showed a positive (+) value. Due to the implementation period of the hanok support project and the local brand globalization project, the change in index values from the perspective of supply and demand can be seen as a result of gentrification.

3⃝ Stage 2: Period from 2014 to 2017
It can be seen as a time when the number of residents compared to the standard decreases to −45.30%, rapidly decreasing the housing ratio and accelerating the commercialization of residential areas. It can be seen that the rate of change in the DID coefficient shows a value of −1–2% (within 5%), and the range of change slightly decreased compared to the first stage of occurrence. The opening index of all businesses shows a value of 1 or more (1.35 and 2.92), and the opening/closing business index is 2.3, which is a (+) value. In addition, the closing index of all businesses also shows a value of 1 or more (1.68 and 1.46), and the opening and closing index of the I industry is 1 or more (2.31, 4.23), resulting in a value of 1.34, and 3.2, which are (+) values. The closure index of the I industry also showed a figure of 1 or more (1.56, 2.36), showing the characteristics of the stage in which the business is actively closed along with the opening. This is the time when new projects begin to be implemented after the government-led project is over, and it is expected to reflect expectations for development as the impact of [5]’s existing project (local brand globalization project pilot project) and [6]’s new project (junk alley regeneration project).

In addition, unlike the first stage, the opening and closing business index shows a value of 1 or more as the closure index increases, indicating that the characteristics of commercial districts in the target area change, which can be seen as the development stage of gentrification.

4⃝ Stage 3: Period from 2018 to 2019
It can be seen as a time when more than half of the population flows out as the number of residents decreased by −51.50% compared to the standard. The increase or decrease in the DID coefficient occurs, but it leads to a decreasing tendency. The total business opening index is less than 1 (0.27, 0.2), and the opening/closing index is less than 0.5 (0.01). It can be inferred that the characteristics of the commercial district change as the opening and closing index of the I industry is also calculated less than 1 (0.62, 0.44), and the resulting opening and closing index is less than 0.5 (0.11, 0.01) compared to the second stage. After the rapid increase or decrease of the commercial district in the second stage, the DID coefficient continues to decrease, and the extent of change and index in the commercial district decrease, lowering the degree of activity of the commercial district. In addition, it can be seen as a stage in which the negative effects of gentrification begin to be strengthened.

5⃝ Stage 4: The period from 2020 to the present.
The number of residents compared to the standard is −54.00%, which is a period of continuous decline following the third stage. The DID coefficient is also showing a continuous decline. The total business opening index shows a value of 0.5 or less (0.38)
and 2 or more (2.21) for the closing index, and the opening and closing index is −1.83, which can be seen as a time when the coefficient value of (−) is large. In the case of the opening index of the I industry, the closing index was 0.5 or less (0.45) and the closing index was 2 or more (4.75), showing a value of −4.3. It can be seen that the number of residents decreases by more than 50%, the DID coefficient decreases, and the closure index rises sharply, accelerating the decline in the region.

6.3. Correlation with Urban Regeneration Projects

In the three target areas, whether urban regeneration projects are implemented or not serves as a key factor for the point where gentrification occurs, which is also proved by the direct reflection of change in land value data.

Different project types and characteristics were found in each area. When the first project implemented in the area is focused on hardware such as building infrastructures or creating the physical environment, this results in Phase 1 of gentrification, as shown in this study, where there is a clear pattern of change in the demand perspective. As proven by the patterns of Gunsan and Daegu in Phase 1, when the environment of the area is created by external factors, the demand perspective is a more powerful factor than the supply perspective in constantly changing the characteristics of the target area afterwards.

When both hardware and software-focused projects are continuously implemented in the target areas, the gap between the actual change in the characteristics of the target areas and the initial project purpose gradually increases. In other words, the supply perspective and demand perspective mutually affect each other, thereby increasing the adverse effects of gentrification. Thus, it is necessary to consider this in project implementation and establish countermeasures.

7. Conclusions

When approaching gentrification in the original city centers of the provinces from the supply perspective, there was a rapid change in land value in line with the point of project implementation, through which there is a huge impact of external factors within the target areas, thereby accelerating gentrification. In other words, the anticipation of good news about development along with the increase in outside visitors changed the built environment and regional characteristics in a short period of time. Gunsan showed a rapid increase in land value that is followed by a downturn, and Daegu showed a stagnation, whereas Jeonju is showing a constant rise in land value to this day. This shows that the type of urban regeneration projects applied to each target area also has a direct impact on environmental changes in those areas.

On the other hand, when approaching the gentrification of each target area from the demand perspective, the characteristics of the areas are changing in the form of a density increase rather than the expansion of trade area in size, because the zones for urban regeneration projects are limited. Moreover, new trade areas and the inflow of gentrifiers are also showing an explosive growth at a particular point instead of a gradual increase.

Through establishing the phases of gentrification in the three target areas based on the models of each perspective, it has been found that there are a total of four phases of gentrification that occur in the original city centers of the provinces.

In sum, most mixed-use areas of residential and commercial districts or commercial areas take the form of commercial gentrification. All three areas showed a remarkable increase in the ratio of retail business, lodging, and restaurant business. Therefore, despite the difference in the initial goals of individual projects, they all shared the common elements of unification and integration of types of business through gentrification, which also serve as factors that intensify the progress of gentrification.

The main purpose of this study was to establish the phases of the development pattern of gentrification and determine the phenomenon in each phase. In future research, it is necessary to build a monitoring system to identify real-time changes in phenomena to set the direction and establish actual policies to deal with the issues arising in each phase.
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