

A Study on Determinants of Franchised Coffee Shop Rents

프랜차이즈 커피점의 상가임대료 결정요인에 관한 연구

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ABSTRACT

The study has analyzed the determinants of retail rents for the franchised coffee shop with the Multi-Regression analysis in Seoul. Central place, agglomeration, and demand-externality theories provide the basis for empirical models. The data used in this study consisted of 2,000 retail units in Seoul. As the results, the results show that coffee shop of retail sales per 3.3m² and characteristic of retail trade-areas, and characteristic of coffee shop affects on the coffee shop's rents per 3.3m². Coffee Shop's sales are the major determinant of coffee shop's rents. Also, coffee shop's goodwill per 3.3 m² and rental bond per 3.3m² are positively correlated with a coffee shop's rents. Additionally, number of wholesale company and manufacturers in the retail trade-areas influences coffee shop's rent per 3.3m². In summary, the study shows that coffee shop's brand identity, location and retail mix in the retail trade areas affects a coffee shop's rent per 3.3m².

KEYWORDS : Franchised coffee shop, Retail rents, Brand Identity, Goodwill, Retail Sales, Multi-Regression analysis.

초 록

이 연구는 다중회귀분석으로 서울시 프랜차이즈 커피점의 상가임대료의 결정 요인을 분석하였다. 중심 지이론, 집적이론, 그리고 외부수요의 이론은 경험적 모형의 기초를 제공한다. 이 연구에서 사용된 자료는 서울시의 2,000개 상점으로 구성되었다. 연구결과로서, 이 결과는 3.3m² 당 커피점의 매출액, 상권의 특성,

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상점의 특징이 3.3m²당 커피점의 상가임대료에 영향을 준다는 것을 보였다. 커피점의 매출은 커피점의 상가임대료의 주요 결정 요인이다. 아울러, 3.3m² 당 상가권리금과 상가보증금은 상가임대료와 정(+)의 관련성을 가지고 있다. 추가적으로, 상권의 도·소매업체의 수 및 제조업체의 수는 3.3m² 당 커피점의 상가임대료에 영향을 준다. 요약하면, 이 연구는 상권의 커피점의 브랜드 인지, 입지, 임차인 혼재, 그리고 3.3m²당 커피점의 임대료에 영향을 준다는 것을 제시한다.

주요어 : 프랜차이즈 커피점, 상가임대료, 브랜드 인식, 상가권리금, 상점의 매출액, 다중회귀분석

1. INTRODUCTION¹⁾

Recently, franchisees seeking to run a coffee shop in Korea. There has been a rapid increase in startup cost and retail real estate transactions in Seoul. Investment in REIT, which is based on commercial real estate such as shopping malls and office buildings, has experienced the greatest increase. The value of real estate and financial derivatives related to property largely depends on retail rents. Real estate developers can raise the value of their liquid assets in the financial market and maximize the profits from real estate by controlling the material, economic and legal factors affecting retail property rents. Given the impacts on the prices of products and goods, data on rental costs is valuable to the entire real estate industry, including real estate finance, real estate development, asset management and tax, public office and individual investors. The value of commercial buildings

is associated directly with the setting of retail rents. In Korea, there are increasing disputes over adjustments in retail rents charged for the occupation of buildings, and rental bonds have been entered into before the signing of contracts between landowners and tenants. Analyzing the determinants of retail property rents in these contracts is crucial.

Therefore, both landowners and tenants need to consider various factors such as rent adjustment, stale income and the effect of other commercial buildings' sales on the value of their building. The tenants usually sign a contract for a certain period without having any accurate information on the sales income and rents of similar buildings and have to pay fees on a regular basis once the contract is signed. Therefore, both parties should scrutinize the determining factors of rents or control risks prior to signing the contract. The past years have seen

1) Jeong, Seung-Young et al(2013), 'The Effects of passing pedestrians Characteristics on retail rents, Appraisal studies', 20, pp.111-123. ; Jeong, Seung-Young et al(2012), 'The Effect of Spatial and Physical Factors on Retail Unit's Prices in Seoul', Korean Real Estate Academy Review, 51, pp.317-330.

rising property prices, and this has prompted an increase in investment and development in commercial buildings. Developers need to review the factors affecting the creation of value in the successful development of commercial property to guarantee their profits and build working strategies for adequate spatial allocation and choosing the combinations of tenants.

The purpose of this study is to identify the determinants of shop rents by using empirical data gathered from the commercial building market in Seoul and, by doing so, provide a possible explanation for the causal relationship between the determinants and retail rents.

2. LITERATURE REVIEW²⁾

In this section, I will examine existing research papers on retail property rents to find determinants. Theories on commercial buildings began to be formulated from urban spatial structure, location and spatial structure (Hotelling, 1929; Christaller, 1966; Lösch, 1940; Alonso, 1964; Vandell and Lane, 1987; Pearson, 1991; Brueckner, 1993; Roulac, 1996; Brown, 1999). It needs to note that empirical studies on the determinants of retail property rents have rarely been conducted.

The fact that data on retail property rents is hard to get and that getting the data requires

specialized expertise, as compared to data on residential real estate, is the probable cause of the scarcity of studies in this field. Analysts should consider consumer behavior, the nature of the buildings and the specific items to be sold in the tenants' shops when they analyze the market. Rent setting is affected by numerous factors: accessibility, visibility, and household spending power, the sales income of the shops, the existence of competitive and supplementary facilities, traffic conditions near the buildings, the habits of the passers-by, the local economy, administrative fees, and relevant regulations.

Existing studies on rents used the multiple regression models using a cross-section of data, or time serial analysis using the vertical section data of a medium rent in a particular area. A recent study conducted by Tay, Lau and Leung (1991) showed the level of shopping center rents has a positive relationship with the age of the shopping center, as does the rent per unit with the size of the shopping center. However rents have a negative relationship with the size of shops. The vast majority of the studies used shopping center lease contracts for their rent modeling. This study, however, uses Korean retail property rent case-studies to attempt to build an alternative model.

Jeong et al (2014a) show the Coffee shop's

2) Jeong, Seung-Young et al.(2013), op.cit. pp.111-123.; Jeong, Seung-young(2015), 'Assessing the Impact of Pedestrian Traffic Volume on Location Goodwill', Journal of Cadastre & Land InformatiX, 45(1), pp.225-240.

rental bond per 3.3m², the weight of rental bond to the total rents 3.3m² are the determinant of a Coffee shop's rent in Seoul. Thirdly, the number of Wholesale and manufacture company in the retail trade-area affects on rent per 3.3m². Jeong et al.(2014b), show that there is a high positive correlation between the goodwill and the performances, the monthly rents and the rental bond are shown to be statistically significant variables in estimating the goodwill per 3.3m². It means that the retail rent is empirically important an independent variable in determining the goodwill and as the major costs in the process of starting the business. and, the rental bond per 3.3m² and number of number of Starbucks stores in the retail trade areas are important in determining the goodwill. Also, the size of the shop has the impacts on the goodwill per 3.3m² positively.

3. THEORETICAL FRAMEWORK³⁾

3.1. Setting hypothesis

Shop rents located in business district are determined by the size of a franchised coffee shop, the width of the front road, physical characteristics, and location. This study hypothesizes rents based on the variables below.

$$RENT_{jt} = f(FAC_j, LOCE_j, PER_j) \quad (1)$$

Where, $RENT_{jt}$ is the shop rent per 3.3m² for the j th building in the t th year ;

FAC_j is a vector of size of the facility ; $LOCE_j$ reflects local economic conditions ; FAC_j is a vector of Characteristics of the facility ; PER_j represents the performance of the franchised coffee shop.

3.1.1 Size of coffee shop

The power of coffee shop to attract customers into the building, and sales income, are two major determinants of rents. The size of the coffee shop is assumed to be positively related to their appeal to customers. Proxy variables of the value of retail properties are: total floor area, number of ground floors and underground floors, parking lot capacity, and the total number of elevators. The size of the coffee shop is also assumed to have a positive relationship to rental value. The larger the size of the retail property, the more diverse the tenants would be. The size of a coffee shop is a variable affecting the appeal to customers. Large-sized retail properties are thought to have high customer appeal due to population density and highly complementary neighboring shops. Therefore landowners of large-sized buildings tend to charge high shop rents to their clients, while those of small-sized shopping malls with

3) Jeong, Seung-Young et al.(2013),ibid. pp.111-123. ; Jeong, Seung-Young et al.(2012), op, cit, 51, 317-330.;Jeong, Seung-young(2015), op,cit, 45(1), pp.225-240.

grocery stores are expected to charge less because they can attract only local consumers.

3.1.2. Neighborhood life cycle stages

Generally speaking, neighborhood life cycle stage tends to have a negative effect on rents. Compared with outdated facilities, modern buildings tend to charge high rents to tenants. As the physical appearance of coffee shops, however, changes gradually over a long time period, a brand-new building is expected to have a higher shop rent due to factors such as the nature of the (broad) commercial district, rising neighborhood property prices, and alteration of land-use purpose.

3.1.3. Location

Location is known to play a key role in determining coffee shop rents. Site selection and rents have been used as basic data for market analysis in the development of retail property. Variables involved in considering location are business district, neighborhood, and location of building. Proxy variables involved in the consideration of location could include convenience of traffic, accessibility, visibility, population density, growth potential and income of residents.

3.1.3.1. Economic clout of the business district

The population and income level of the

neighborhood are two major factors affecting the growth potential of the business district, and, therefore, the area with high population density, strong growth potential and high income tends to have high rents. It usually takes over two years for a business district to develop. Coffee shop rents near a subway station linked to the major commercial district usually tend to be higher than those without a station in the outskirts. Coffee shop rents are closely related to the economic clout of the surrounding business district. Proxy variables indicating economic clout are the levels of rental bonds, and outgoing charges per retail unit.

3.1.3.2. Accessibility

Analysts tend to consider consumers more closely than suppliers. Coffee shops are expected to be easily found and accessible. The location of the business district is assumed to have minimal impediments that could give rise to time delays, and other economic and mental inhibitions to consumers. Coffee shops located along trunk or wide roads are considered to be ideal, and the tenants tend to pay high rents for their malls on this location. Rents are determined by various factors such as the height of the lot, location within the building, and distance from the lifts. Proxy variables affected by the distance from the subway station to the shop are transportation fees and time con-

sumed whilst in traffic.

3.1.3.3. Location inside a building

Rents are also determined by the vertical and horizontal location inside a building. Usually the malls located on the first floor have higher rents than those on the second or underground floors. The distance from lifts or other malls also affects the setting of rent prices. Even malls on the same floor may have differentiated rents, depending on their vicinity to a lift.

3.1.3.4. Urban economic

The source of demand for real estate is a part of the business activity in the area. Changes in hiring practice of economically active population for each industry greatly affect the market and they are usually followed by changes in the consumption pattern. That is, people working in the secondary or tertiary industry maintain the westernized life style, so they contribute greatly in increasing the demand for consumer goods including durables. In this case, department stores with the concentration of sales businesses or discount stores with restaurants will suitably cater for the population as well as the food court, entertainment district, hotel, cram school, or theater.

3.1.3.5. Tenants

1) The performance of the franchised coffee shop.

According to studies on retail rents or retail property, income positively affect retail sales (Ferber; 1958 & Liu; 1970); and Total population, household size and population change can explain total retail sales (Liu;1970, Ingene and Yu;1981, Adamchak, Bloomquist, Bausman and Qureshi;1999). A change in the income-generating capacity of the shopping center , in general, do not respond immediately average retail rents in a regional shopping center(Gregory H. Chun, Mark J. Eppli and James D Shilling; 2001). There is the time-lag effects relationship between retail sales and retail rents.

2) Tenants mix

Core tenants affect coffee shop rents. Core tenants represent global, national or regional brands. Nationally-branded tenants have numerous franchised commercial networks, and they are expected to create high sales income. Banks are a proxy variable for core tenants.

3.2. Characteristics of data⁴⁾

3.2.1. Sample

The data set used for this study consists of 2,000 examples of retail unit lease in Seoul and

4) Jeong, Seung-Young et al,(2013),op.cit. pp.111-123.; Jeong,Seung-young et al,(2012), ibid, 51, 317-330.; Jeong, Seung-Young(2015), op, cit,45(1), pp.225-240.

the transcripts of the lists of each registered real estate agency (2014). Monthly rent per 3.3 m²⁵⁾ was assigned as a response variable, and items of facility and location were assigned as explanatory variables. The monthly rent, rental bond, and goodwill per 3.3m² in Seoul came from data on the coffee shops, which were on the market from December 1st of 2014 to December 31st of the this year. The explanatory variables chosen were : Rental bond of shop, Goodwill of shop, Retail Sales of shop, the weight of monthly rents to the total rents ratio, The deposit to Total rents ratio of shop, shop size, population density, population ag-

ing, average rental bond per 3.3m², average of monthly rents per 3.3m², average Goodwill per 3.3m², number of retail & wholesale companies, number of transforming companies, number of manufacturing companies, numbers of public employee. The data which used in this study summarized in the following table:

3.2.2. Analysis of relationship between variables

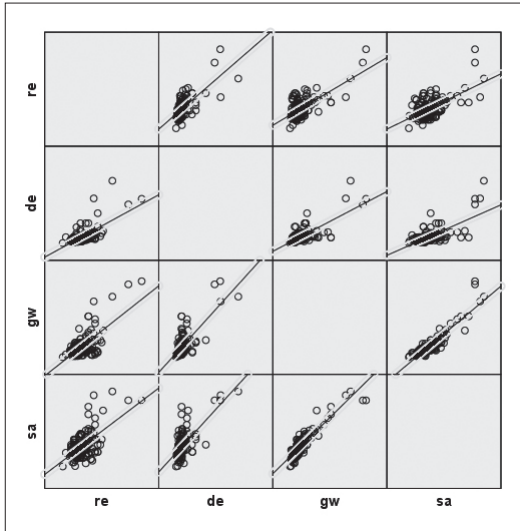
In order to establish the research model for this study, a bi-variate scatter plot was analyzed to investigate whether the monthly rent of coffee shop had the standard distribution and to

Exhibit 1. Descriptive Statistics

NO	Variable	Mean	Standard Deviation	Minimum	Maximum
X9	Monthly rent of shop	15.59	7.54	3	60
X8	Rental bond of shop	33.53	40.35	3	313
X7	Goodwill of shop	98.25	102.50	9	667
X14	Retail Sales of shop	4.80	2.36	1	15
X12	The Monthly rent to Total rents ratio of shop	90.02	1.41	91	100
X13	The deposit to Total rents ratio of shop	1.98	1.41	0	9
X6	Shop size	13.27	6.07	3	50
X18	Population density	4.80	2.36	7,502	29,028
X19	Population Aging (%)	78.8	20.37	49	114
X1	Average of rental bond	279	111.10	58	279
X2	Average of monthly rents	9	5.99	4	9
X3	Average goodwill	206	143.03	68	206
X35	Number of wholesale and retail companies	11,593.76	8,214.40	4,396	37,945
X39	Number of transforming companies	2,923.51	676.29	1,477	6,379
X29	Number of Manufacturing Companies	3,167.18	2,524.30	1,120	12,215
X50	Numbers of public employee	5,506.67	3,349.54	2,842	16,992

5) One pyeong is equal to 3.3 square meters.

study the correlation coefficient between elements that determined the rent. The result was a plot which showed the elements determine monthly rent of coffee shop in Seoul.



Note
 RE : monthly rent per 3.3m² ; DE : rental bond per 3.3m²
 :GOODWILL FOR THE SHOP : goodwill per 3.3m²; SA : shop sales per 3.3m²

Figure 1. Scatter plot matrix of response variables and major explanatory variables

Commercial leasing contracts in Korea mainly consist of monthly rent plus rental bond and goodwill. In general, the value of monthly rent is inversely proportional to the rental bond with respect to the whole lease amount, but the Figure shows the relationship between the monthly rent per 3.3m² and rental bond per 3.3 m² or goodwill per 3.3m² to be linear. If the two elements were to share an equal amount per

3.3m² in monthly rent, they would spread out around the y=x line. However, the data points of monthly rent and rental bond are located in the area where y>x, so one can see that the monthly rent carries greater weight than the rental bond. Moreover, the data points of monthly rent and goodwill are located in the area where y<x, so one can see that goodwill carries greater weight than the monthly rent. Similarly the data points of rental bond per 3.3 m² and goodwill per 3.3m² are located in the area where y<x, so one can see that rental bond carries greater weight than outgoing charges. According to the scatter plot, there exists a linear relationship between the monthly rent per 3.3m² and goodwill per 3.3m², the monthly rent per 3.3m² and rental bond per 3.3m², or goodwill per 3.3m² and rental bond per 3.3m², but outliers are also found as well. Especially there is a clear linear relationship between the monthly rent per 3.3m² and rental bond per 3.3m².

The correlation analysis was carried out to investigate the relationships between the monthly rents and the independent variables. The highest correlation coefficient between the monthly rents and the rental bond was 0.689 (p-value<0.001) and there are positive relationships between monthly rents and retail sales (correlation coefficient=0.598, p-value=0.001). Also, there are strong relationship between the retail sales and goodwill (correlation coeffi-

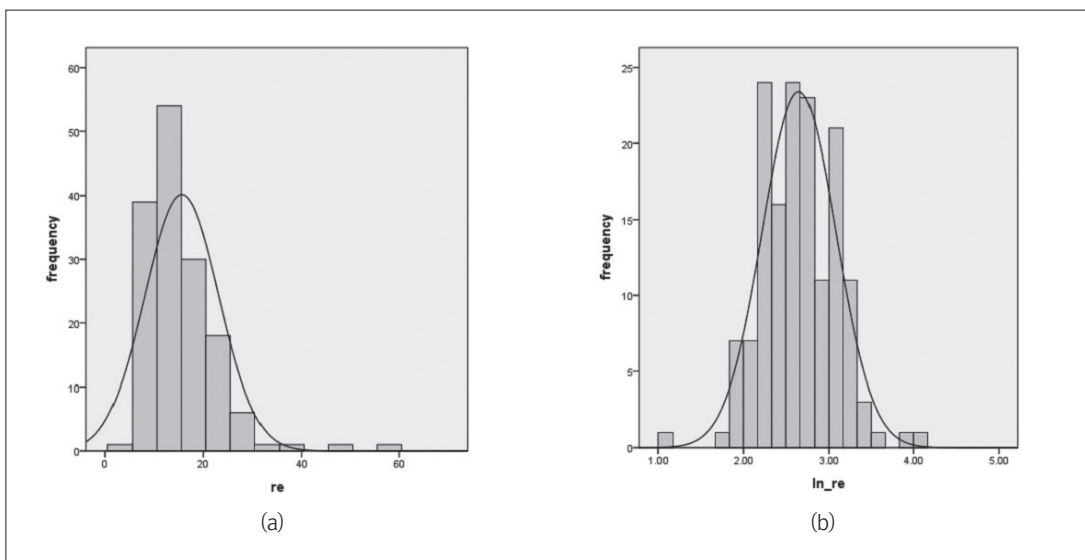


Figure 2. monthly rent and logarithm monthly rent per 3.3m²

cient=0.909, p-value=0.001).

As Figure 2 shows, the distribution of monthly rents takes the form of a long tail in the right-hand direction, and we decided to do parametric statistics based on normal distribution and tests. As a result, I resolved the distribution problem having a long tail in the right direction which is shown in <Figure 2-(b)> R2(adjR2) of regression models per stage based on Original Data-set are 0.689(p <0.00). I decided to apply a natural logarithm to the logistic regression variable. A wide range of rents is found in coffee shops in core commercial districts, and a wide gap between retail rents when compared to advantageous commercial districts such as in the volume of foot traffic on

pedestrian shopping streets were also found.

4. EMPIRICAL RESULTS⁶⁾

This study centered on the franchised coffee shops among commercial real estate developments in Seoul, and multiple-regression analysis was utilized. The research model went through, 1) verification of multi-collinearity, and 2) selection of variables to extract variables related to shop rent.

4.1. Multi-collinearity

This study also analyzed the multi-collinearity of the data. When the multi-collinearity was reviewed based on the inflation factor variable, a very large multiple-collinearity between Num-

6) Jeong, Seung-Young et al,(2013),ibid. pp.111-123.

ber of retail & wholesale companies and Number of manufacturing companies was found. In order to investigate this multi-colinearity, this study used a principal component analysis and Correlation analysis. The multi-colinearity was a result of the regression based on Number of retail & wholesale companies and Number of manufacturing companies. Correlation data predicts that the correlation coefficient (-0.9617) of Number of retail & wholesale companies and Number of manufacturing companies means that the two variables have a close value.⁷⁾ Also, the correlation between the number of ground floors and construction completion date shows a strongly positive relationship.

The result indicates that as time goes, intensive land-use occurs.

I conducted principal components analysis to reduce the multi-colinearity among variables and the number of variables. Eigen values of three Factors are 5.27, 3.71, 2.11, and the aggregated value of the three Factors explained the total 74 % (Factor 1 representing the response to monthly rent shows 35.1%, Factor 2 : 24.7%, and Factor 3 : 14.1%). Factor 14 merely explains below 0% of the entire alteration, and, therefore, it could be negligible. Regarding proportion, the Factor 1 has the highest score while the Factor 14 has the lowest. The column of cumulative ratio explains 81.9 % of the total factor (P=14),

Exhibit 2. Eigenvalues of the Correlation Matrix

	Eigenvalue	Difference	Proportion	Cumulative
1	5.278	35.187	35.187	5.278
2	3.716	24.772	59.960	3.716
3	2.117	14.115	74.075	2.117
4	1.176	7.842	81.916	1.176
5	.970	6.465	88.381	.970
6	.665	4.435	92.816	.665
7	.345	2.299	95.115	.345
8	.290	1.933	97.048	.290
8	.197	1.310	98.358	.197
9	.117	.782	99.140	.117
10	.068	.451	99.591	.068
11	.037	.249	99.840	.037
12	.016	.104	99.944	.016
13	.008	.056	100.000	.008
14	.000	.000	100.000	.000

7) The study of C.F.Sirmans and Krisandra A.Guidry)(1992) found a high multi-colinearity between the aggregated space and the size of parking lot (+0.96).

and the three principal components could be interpreted to summarize the given data appropriately. Therefore, data on 14-dimension can be miniaturized through principal components in 4-dimension.

- *Number1 principal component* = $0.82 \times (\text{Average rental bond in the retail trade-area}) + 0.82 \times (\text{Number of retail \& wholesale companies}) + 0.80 \times (\text{Average monthly rents for retail trade-area}) + 0.79 \times (\text{Number of public employee}) + 0.72 \times (\text{the average goodwill for retail trade-area}) + 0.71 \times (\text{Number of manufacturing companies})$.

- *Number2 principal component* = $-0.74 \times$

$(\text{rental bond}) + 0.72 \times (\text{the weight of monthly rents to the total rents ratio}) - 0.72 \times (\text{the weight of rental bond to the total rents ratio of shop}) - 0.65 \times (\text{goodwill}) + 0.52 \times (\text{Shop size})$.

- *Number3 principal component* = $-0.86 \times (\text{Population aging}) + 0.67 \times (\text{Number of transportation companies}) + 0.43 \times (\text{Population density})$.

Regarding the principal component, (Factor) 1; average rental bond in the retail trade-area, number of retail & wholesale companies, average monthly rents, number of public employee, the average goodwill for retail trade-areas and number of manufacturing companies have common characteristics, while principal

Exhibit 3. Eigenvectors

Variable	Prin1	Prin2	Prin3
Average rental bond in the retail trade-area	.829	.435	.034
Number of retail & wholesale companies	.828	.429	-.007
Average monthly rents for retail trade-area	.802	.459	.315
Number of public employee	.793	.141	-.107
Average goodwill for retail trade-area	.724	.462	.454
Number of manufacturing companies	.713	.333	-.207
Rental bond for the shop	.474	-.745	.202
The weight of monthly rents to the total rents ratio of shop	-.317	.729	-.379
The weight of rental bond to the total rents ratio of shop	.317	-.729	.379
Goodwill of shop	.534	-.650	-.024
Retail Sales price of shop	.541	-.614	.042
Shop size	-.278	.523	.161
Population aging	.139	-.288	-.867
Number of transportation companies	-.487	.089	.679
Population density	-.514	.086	.432

component (Factor) 2 ; rental bond, the weight of monthly rents to the total rents ratio, the weight of rental bond to the total rents ratio, goodwill for the shop, retail sales and Shop size, also have manifestly common characteristics. We can interpret the meaning of each principal component based on the common characteristics of the result. Principal component (Factor) 1 can be called local economic conditions. Principal component (Factor) 2 can be called the characteristics of the facility; Principal component (Factor) 3 can be called the Young town and Principal component.

Eigen vector from <Exhibit 3> shows that principal component 1 has almost same value across the fifteen variables, and it indicates the cumulative average value of all the variables. Meanwhile, the principal component 2 shows a contrast between shop size and number of manufacturing companies, average rental bond, average goodwill, average monthly rents against rental bond ratio, goodwill of the shop, retail sales.

4.2. Extraction of significant variable

Before deciding upon significant variables,

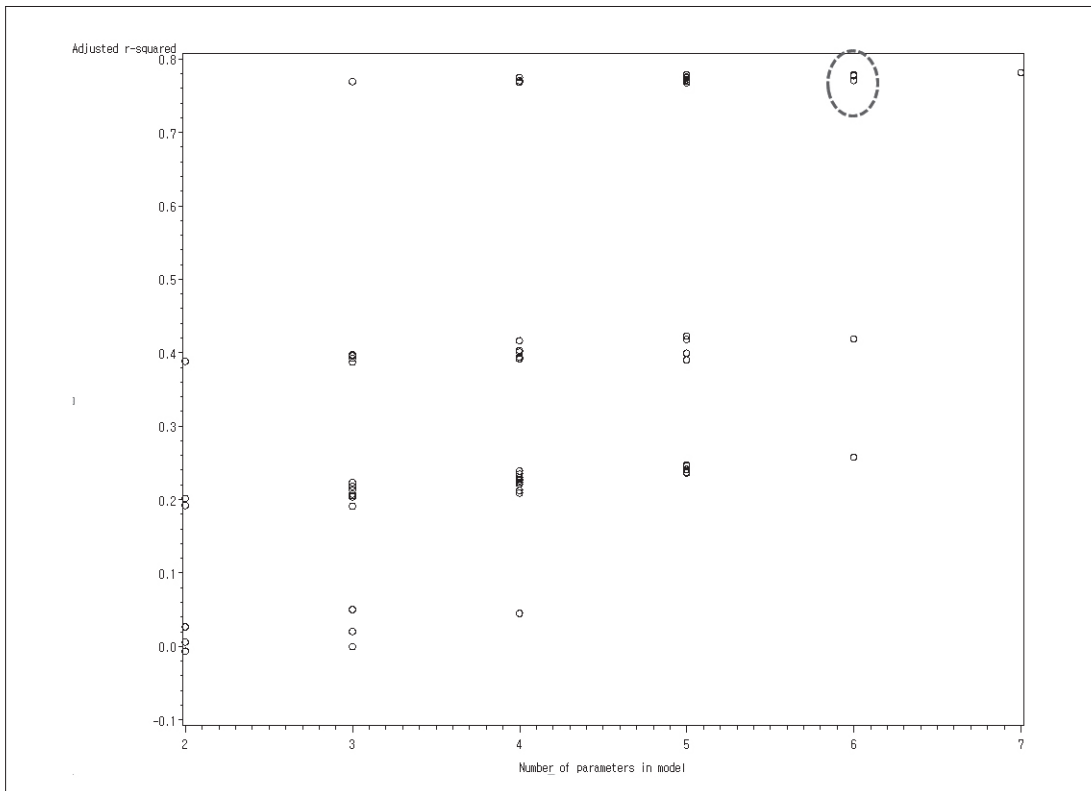


Figure 3. Selection of variables through the adjusted coefficient of determination

the proper number of variables which make up the scaled-down model was selected through the plot which represents Mallows' Cp and adjusted coefficient of determination (adjR2). According to Mallows' Cp, a scaled-down model with 6 variables was preferred, whereas according to the adjusted coefficient of determination (adjR2) standard, arrange of 6 variables was second lowest. The number of preferred variables in both models is the same.

This is a process deciding p number of explanatory variables among 9 variables which are expected to affect the monthly rent of a franchised coffee shop. Through several methods of selecting variables, parameters were measured among the 9 correlation variables which are directly related to a franchised coffee shop rents. Among them only the variables representing the weight of monthly rents to total rents ratio, retail sales of shop, rental bond of shop, and goodwill of shop had reliability quotients higher than 95%. According to the adjusted coefficient of determination (adjR2) standard, a scaled-down model with step(s)

more than 1 but less than 6 is preferred. However, there is not much difference among the 6 models.

The results of analyzing the final regression model using the stepwise regression method are summarized in <Exhibit 4>. For the major variables, steps 1 and 2 selected Rental bond and the weight of monthly rents to the total rents ratio, as in the forward selection method; step 3 selected retail sales, and step 4 selected the goodwill.

Based on past studies and stepwise selection of variables, this study was able to build the optimal regression model shown in <Exhibit 4>. The stepwise selection of variables was right for this occasion because the F-value was higher than values obtained from other variable selection methods. However, it should be noted that none of the methods can assure the optimal regression equation, and that there could be more than two equations. When the statistic of 6 explanatory variables is investigated, P-values of all the variables except the number of elevators are below 0.05, thereby making them

Exhibit 4. Stepwise regression method

Step	Variables	Partial R-Square	R-Square	CP	F-value	Pr>F
1	X6_rental bond of shop	0.3926	0.3926	272.347	96.95	0.000
2	X7_ the weight of monthly rents to the total rents ratio	0.3800	0.7726	11.3690	248.99	0.000
3	X8_retail sales of shop	0.0071	0.7797	8.4702	4.76	0.030
4	X5_goodwill of shop	0.0050	0.7847	7.0200	3.40	0.067

Exhibit 5. Comparison of Cp, adjR2, and MSE

P	Variable	Cp	adjR2	MSE
1	X6	266.79	0.388	0.337
2	X6, X7	9.289	0.7695	0.2073
3	X6, X7, X8	6.455	0.7752	0.2048
4	X5, X6, X7, X8	5.051	0.7788	0.2031
5	X5, X6, X7, X8, X9	5.757	0.7792	0.2029
6	X1, X2, X5, X6, X7, X8	5.084	0.7818	0.2018
7	X1, X2, X5, X6, X7, X8, X9	6.171	0.7817	0.2018
8	X1, X2, X3, X5, X6, X7, X8, X9	8.032	0.7804	0.2024
9	X1, X2, X3, X4, X5, X6, X7, X8, X9	10.00	0.7789	0.2031

- Note : x1- Average rental bond in the retail trade-area; x2-Average monthly rents in the retail trade-area ; x3-the average goodwill for retail trade-area ;
- x4-Shop size, x5-goodwill; x6-rental bond; x7-the weight of monthly rents to the total rents ratio; x8-sales of shop; x9-Population density

significant above 95%. In addition, the adjusted coefficient of determination ($adjR^2$) which denotes the explanatory power of the optimal regression model was 0.7818, which was rather high when compared to the results from previous studies.

This study selected the adjusted coefficient of determination ($adjR^2$) as the standard in selecting major variables, and selected the final model after considering the mean square error (MSE) and Mallows' Cp. In this case, the highest value of the adjusted coefficient of determination ($adjR^2$) would be the most ideal, whereas the lowest value was preferred for the mean square error (MSE) or Mallows' Cp. <Exhibit 5> compares the Mallows' Cp, adjusted coefficient

of determination ($adjR^2$), and mean square error (MSE) to the variables selected in the step-wise selection method, such as rental bond, the weight of monthly rents to the total rents ratio, retail sales of shop. As a result, the value of Mallows' Cp was lowest in the 6th step, whereas the adjusted coefficient of determination ($adjR^2$) was the highest. Also, the value of mean square error (MSE) was the lowest in the 6th step. Based on the finding that the variable inflation factor (VIF) for each selected variable was less than 2, this study determined the final scaled-down model.

The constant for the regression equation was -118.51, and the regression coefficient for the rental bond was 0.239. Also, the t-value

Exhibit 6. ANOVA and Parameter Estimates

(a)

Source	DF	Sum of Mean	Mean Square	F Value	Pr > F
Model	6	22.276	3.712	91.17	0.000
Error	145	5.904	0.0040		
Corrected Total	151	28.181	Dependent Mean	2.651	
	Root MSE	0.201	R-Square	0.7905	
	Coeff Var	7.611	Adj-Square	0.7818	

(b)

Variable	DF	Parameter Estimate	Standard Error	t-Value	Pr>t	VIF
intercept	1	-118.51	7.588	-15.62	0.000	0
LN_Average rental bond in the retail trade-area	1	0.239	0.122	1.95	0.052	9.17
LN_Average monthly rents in the retail trade-area	1	-0.236	0.140	-1.69	0.093	9.13
LN_goodwill	1	-0.086	0.043	-1.98	0.049	4.29
LN_rental bond of shop	1	0.716	0.038	18.75	0.000	2.94
LN_the weight of monthly rents to the total rents ratio	1	25.787	1.652	15.61	0.000	2.17
LN_retail sales of shop	1	0.214	0.074	2.88	0.004	3.89

of rental bond was 1.95, and the probability of significance was 10%, thereby rejecting H_0 from the hypotheses $H_0: \beta = 0$, $H_1: \beta \neq 0$, and $\alpha = 0.01$. This means that rental bond was the variable that affected the monthly rent the most. Next, this study investigated the relative importance of variables in explaining monthly rent. Here, when t-value was employed to find out the weight of each explanatory variable, the importance decreased relatively among the variables according to the following order: rental bond(18.75), the weight of monthly rents

to the total rents ratio (15.61), retail sales of shop (2.88), and goodwill of shop (-1.98).

Exhibit 9, based on the parameter estimate of the regression coefficient, produces the regression equation.

$$\begin{aligned} \ln(\hat{y}) = & -118.51 + 0.239 \times \ln(\text{Average rental bond in the retail trade-area}) \\ & - 0.236 \times \ln(\text{Average monthly rents}) \\ & - 0.086 \times \ln(\text{goodwill}) \\ & + 0.716 \times \ln(\text{rental bond of shop}) \\ & + 25.787 \times \ln(\text{the weight of monthly rents to the total rents ratio}) \\ & + 0.214 \times \ln(\text{retail sales}) \end{aligned} \quad (2)$$

Exhibit 7. OLS regression models Log of Rental Bond

(a)

Source	DF	Sum of Mean	Mean Square	F- Value	Pr > F
Model	6	73.84	12.30	220.01	0.000
Error	145	8.11	0.056		
Corrected Total	151	81.95	Durbin-Watson	2.00	
	R-Square	0.90	Adj-Square	0.897	

(b)

Variable	Parameter Estimate	Standard Error	t- Value	Pr>t	VIF
intercept	156.04	6.72	23.20	0.00	
LN_ Average monthly rents in the retail trade-area	-0.118	0.12	-0.924	0.35	5.53
LN_goodwill	0.189	0.05	3.779	0.00	4.04
LN_monthly rents of shop	0.991	0.05	18.798	0.00	1.40
LN_retail sales of shop	-0.208	0.08	-2.329	0.021	4.05
LN_the weight of monthly rents to the total rents ratio	-34.097	1.46	-23.309	0.000	1.24
LN_ Average tax in the retail trade-area	0.042	0.038	1.19	0.265	5.55

The result shows the most important factors affecting rental bond of a franchised coffee shop are the weight of monthly rents to the total rents. Furthermore, retail sales, monthly rents, and goodwill of a franchised coffee shop reveal significant in the OLS regression models

Log of Rental Bond.

〈Exhibit 8〉 shows the results of multiple regression analysis based on Factor analysis data. The adjR2 value indicates that about 41.5% of the variance in monthly rent is explained by the two predictor factors. The β values indicate

Exhibit 8. Component(Factor) Coefficient

	Unstandardized Coefficients		Standardized Coefficients	t	Signif of t
	B	Std.Error	Beta		
intercept	15.586	0.468		33.296	0.000
Factor1(Characteristics of the facility)	4.904	0.470	0.650	10.442	0.000
Factor2(Local economic conditions)	0.248	0.470	0.033	0.527	0.598

the relative influence of the entered variables, that is, that Characteristics of retail facilities have the greatest influence on monthly rent ($\beta=0.650$), followed by Local economic conditions ($\beta=0.033$). The direction of influence for all two is positive. We conclude that the influence of Characteristics of retail facilities is greater than the impact of Local economic conditions, equally measured. Indeed, it seems that the effect of Characteristics of retail facilities on monthly rent is approximately 20 times that of the Local economic conditions ($0.650/0.033$).

5. Conclusion⁸⁾

This study described in detail how certain variables are related to the characteristics of franchised coffee shops and how their location affects the determination of the monthly rent in Seoul. For the empirical model, it established a data set utilizing the coffee shop leases in Seoul. This study selected significant variables from among 6 variables related to the characteristics of the facility and locations using multiple regression analysis. According to the analysis, the following factors affecting the monthly rent of coffee shop were found to be significant: rental bond, goodwill and retail sales. Among them, rental bond and goodwill were proportionally related to monthly rent, whereas the weight

of rental bond to total rents ratio and goodwill were inversely related to the monthly rent. Especially, rental bond, goodwill, and retail sales were found to be important explanatory variables in calculating the monthly rent of a franchised coffee shop. When this study observed the statistics of the optimal model based on the 6 explanatory variables, each P-value for every explanatory variable was found to be below 0.05, so the finding was significant at 95% level or higher. Also, both the adjusted coefficient of determination ($\text{adj}R^2$) at 0.78 and the value of F at 91.17 were rather high when compared to the results from previous studies. The residual analysis, influence evaluation, and multicollinearity analysis were performed as parts of the regression analysis, thereby satisfying the condition for the independence of residue. Also, the distribution of residue was close to normal, so the result satisfied normalization.

Other studies have mostly confined themselves to investigating limited variables representing the conditions of the retail trade-areas, such as the vacancy ratio, business cycles, and economic indicators but this study builds a comprehensive shop rent decision model with more detailed data at the level of the facility. Accordingly, this study, through an empirical analysis, has proved that the monthly rent of the

8) Jeong, Seung-Young et al.(2013),op.cit. pp.111-123.

franchised coffee shop in Seoul is significantly affected by rental bond, goodwill, and retail sales. Thus, this study has proved that one must consider the Characteristics of retail facilities, local economic conditions and the performance of the franchised coffee shop when developing a monthly rent decision model for franchised coffee shop. Moreover, this study finds that it is vital to develop variables and models for shop images and brand in the future.

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