

An Analysis of Office Market Rent in Colombo 03

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Abstract

Office Market is one such area which has not yet been addressed deeply by the scholars in Sri Lanka. Office market related studies in the country seem not prominent. The reasons for that may be higher complexities in identifying an exact office market in Sri Lanka, even though most of other countries have well demarcated office markets such as New York Manhattan Office Market, Hong Kong Office Market, and Berlin Office Market etc. Office properties become one of the important aspects of the property market as well as of the economy of the country where all most service sector activities are taken place. Beside lack of studies on office rent determinants, hide progress of office rent market. Arbitrary decision of landlords on fixing of office rent may further affect negatively to rental market. This study, aims to analysis the determinants of the rent for office space in Colombo 03. The theoretical background of this study is associated to the hedonic price model, which is widely applied to analyze price or rental price variations of the real estate properties. In the data collection process, quantitative data were collected. Questionnaires were distributed to 38 Grade A, B, C office buildings in Colombo 03 area. To collect qualitative data, the author has conducted several discussions with different company owners and top management personally to get a basic awareness about the area of research study. The Result shows that facilities of the building have a significant impact on the rent, hence structural characters and legal perspectives have considerable amount of impact on the rent. Further it shows that locational factors do not significantly impact on the rent.

Keywords: Office Market, Rent Determinants

INTRODUCTION

Background of the Study

Individuals and communities need structured and conditioned spaces. The built environment and things contained in it are vital for human's day to day activities and on a global scale real estate makes up more than 60% of the world's equity (Jones Jang LaSalle 2013). Real estate which can be defined as "Property consist of land and the buildings on it, along with its natural resources such as crops, minerals, or water. Investment in real estate is considered as a long term investment compared to other types of investment. When investing in income producing property, investors expect to get profit from income stream which is reflected in cash flow during the holding periods or ownership. Investors must stipulate the value of the properties they will buy and determine how much profit can be generated (Zainal Zawir Simon, Noer Azam Achsani, Adler. Manurung & Roy Sembel, 2014) it comes as no surprise, therefore, that there is an increasing interest in real estate demand. Commercial property has an important role in real estate markets. (Eda ustaoglu 2003) argues that commercial property as a property-related issue affects everyone in the sense that it shapes the built environment. Furthermore, the importance can be related to three different factors: First, as a factor of production, commercial property provides the space to house the activities of business and industry. Second, as a financial asset, commercial property constitutes a significant part within asset markets. Third, as an investment medium, it provides revenues to its holders on the basis of value. In border sense commercial properties can be re categorize as "Retail properties and Office Properties" (Jones Jang LaSalle 2013)

In this study the real estate for office uses has been focused. Simply we can define office place according to Delik Pekdemir, (2009) as in modern terms an office usually refers to the location where white-collar workers are employed. Office is a place where mass of data is accumulated in a systematic manner and is analyzed for management action and channels of communication within and outside of an organization (Ariyawansa, 2010). Jones Jang LaSalle (2013) mention the transition of factory based or manufacturing economy to service based economy has become the main reason for sudden emergence of "Office" trend within Sri Lanka.

Since the end of the civil war in mid-2009, the country's economy has been on a strong growth trajectory led by determined rebuilding measures, surging tourism and increased investor confidence (Jones Jang LaSalle 2013). In Sri Lanka, real estate is an emerging

industry in which many revolutions appear. Colombo, also known to be the heart of business with no doubt is the internationally recognized landmark in Sri Lanka. As a third world developing country Sri Lanka is necessarily recognized with attached to Colombo in global context. Over the past decade a significant improvement in the businesses can be observed within Colombo. However, with the dramatically changes in world business sector, many opportunities have been emerged even within the island wide. All most all the giants in the business world in Sri Lanka prefer and already established their head office around Colombo due to its strategic locational value.

Office Market is one such area which has not yet been addressed deeply by the scholars in Sri Lanka. However, office market related studies in the country seem not prominent. The reasons for that may be higher complexities in identifying an exact office market in Sri Lanka, even though most of other countries have well demarcated office markets such as New York Manhattan Office Market, Hong Kong Office Market, and Berlin Office Market etc. This study, therefore, aims to analyze the general pattern of the office market and to discuss the determinants of the rent for office space in Colombo 03.

Statement of the Problem

Colombo, as the largest commercial city in Sri Lanka has been evolved significantly over the last decade. This shift is a result of structural changes took place within the country after the war situation prevailed for almost thirty years (Jones Jang LaSalle 2013). Hence, there is a large pool of growing opportunities that has to be addressed properly to meet the economic growth goals in future. Moreover, there is a tremendous expansion in the service sector. According to the Central Bank report for (2013), highest contribution to the GDP is by the service sector and service sector has a linear relationship with the new trend of office culture. Because due to the strategic advantage of the location many business giants would look forward to establish their main office near Colombo (Jones Jang LaSalle 2013). Hence, office properties become one of the important aspects of the property market as well as of the economy of the country where all most service sector activities are taken place.

However, there are number of determinants for the rent of an office premises. Especially when considering a city with a strategic importance. This new trend of office culture and growing opportunities in the business field will ultimately create a blue ocean for the potential investors. Their focus will essentially draw towards the commercial city of country,

none other than Colombo. There is lack of economic studies on the economics of the office property market in Sri Lanka mainly due to general absence of data on rental values. Beside lack of studies on office rent determinants hide progress of office rent market. Arbitrary decision of landlords on fixing of office rent may further affect negatively to rental market. Therefore it is essential to do a proper research to gather and analyze data to serve the information needs. It is not only important to support the potential investors of the office rent market but also other businesses will also get benefited. Therefore, having done a research on this specific topic not only serve the information needs of investors of office building lease market but overall all the business companies. In this research the principal focus is to determine the significant factors which determines the office rent in the Colombo 03 area.

OFFICE MARKET RENT DETERMINANTS

The following section gives an overview of the most important rent determinants identified in previous empirical studies. Most of these studies apply a model to test the relative importance and order of these factors.

Because of heterogeneity of the market each property owns specific characteristics or qualities such as location and physical characteristics etc.... of the property. The rent of each property varies widely and systematically with these characteristics. Rent has been defined as a “definite periodic return, in terms of money or other provisions, for the use of property” (Ring, 1972: 161). By considering this statement, it can be say that rental price of the property is important as it shows the amount of rental payment that must be paid by tenants and the amount of rental income that will be received by landlords. As Eda ustaoglu (2003) mentioned “Rental price is primarily determined in the market due to the supply and demand relationship”.

Research on office rent determinants has been the subject of a wide range of specialist fields, ranging from econometrics to urban studies and from architecture to civil engineering. (Oven and Pekdemir 2009). Considering past studies done under different geographical locations and socio-economic conditions proved that both demand and supply factors effect to determine the rent of office uses.

Eda ustaoglu (2003) argued those factors can be categorized into three sections. Property's ability to command rents is basically related to its physical and locational characteristics. Different from these two characteristics, there is another characteristic attributed to a leasehold property. It is the transfer (lease) characteristics. These three characteristics attributed to a rental property provide a base for the analyses of the rental value.

Physical characteristics relate to natural grants and man-made structures like

- Size
- Functional efficiency
- Vertical location and internal accessibility
- Construction components and internal services
- Physical structure of the building
- Physical Depreciation

In his study locational advantages are of great importance in determining the values of both urban land and built structure. As he mentioned locational attributes will be examined under three specifications

- Neighborhood influences,
- Site access and transportation patterns
- Linkages.

In transfer (lease) characteristics variables it represents characteristics and terms of a lease. Oven and Pekdemir (2009) in their study office rent determinant factors have been identified as

- Econometric
- Building,
- Location,
- Contract

As they argued Econometric determinants are based on supply and demand variables: various demand side determinants have been used including the vacancy rate, GDP the service sector employment the unemployment rate the interest rate the absorption rate The only supply side determinant used in these studies was the office stock which reported to have either no or negligible influence on office rent Furthermore, not all demand side determinants have been found influential. Indeed, only the vacancy rate GDP and the interest rate are reported to be significant influences. Hence it may be concluded that econometric parameters cannot be excluded from any realistic office rent model and that, although the

relative value of these determinants may change, their influence on office rent is largely unaffected by any regional difference.

In feather they explain it has also been recognized that office property is a heterogeneous good which has strong attributes relating to physical characteristics of the building and locational influences. In addition, the terms specified in the contract can influence the rental value and they also have to be considered as potential influential determinants.

Researchers like Clapp (1980), Brennan, et. al. (1984), Frew and Jud (1988) and Wheaton (1984) proved that building characteristics, such as

- building age
- rentable floor area,
- number of stories
- area allocated to common use
- number of amenities offered in the office building -bank, conference room, shop, restaurant, day-care, health club and parking area

can influence to determining rent in office uses.

Wei chin (henry) (2003) in his study mentioned some researchers like (Gardiner et al. 1988, Dobson et al. 1992, Giussani et al. 1993a, Giussani et al. 1993b, D.Arcy et al. 1994, McGough et al. 1994, Hendershott et al. 1996 Keogh et al. 1998, Tsolocas et al. 1998, D.Arcy et al. 1998) have been focused of macro-economic factors when determining the office use rent in market. Some of those factors are

- GNP
- Employment Rate or, Unemployment rate(Total/Service)Sectors)
- Interest rates (long term or short term)
- Inflation
- Economic Uncertainty
- Income
- Population

Tsolacos et al. (1998) found that the demand factors (GDP, interest rates and unemployment rate) has a significant influence on the establishment of the rental rates for office buildings. Oven and Pakde et al (2006) also found that interest rate is one of the important factors in determining rental rates of office in market.

A study conducted by D'Arch et al. (1999) found the relationship between GDP with rental rates, where the change in GDP is one of the most dominant factor to affect the rental rates.

For labor in Germany, Voigtlander (2011) found that office worker is the best predictor to determine the average of rental rates in comparison with the overall level of employment and unemployment.

Not only the rental rate, the macroeconomic variables also could affect the selling price of office buildings. Singh and Komal (2009) in their study in India found that the GDP, inflation and interest rates could affect the selling price of real estate in India.

Empirical Studies on Price Models of Office Rents

The study done by Clapp (1980), which is included in the focused on the effects of internal and external characteristics of offices on asking rents examined. His main purpose is to investigate the effects of intra metropolitan office locations on office rents throughout the Los Angeles metropolitan area. He constructed a model by utilizing Cobb-Douglas function.

$$Q = A L^{\alpha} S^{\beta} F_c^{\gamma} F_s^{\delta}$$

Where

Q, L, S, F_c, F_s = output of office services and inputs of labor, office space and Face-to-face contracts.

The data of this study covers 105 high rise office buildings in Los Angeles metropolitan area.

His independent variables include:

- Building characteristics (building's age, number of floors, net rentable area, internal amenities such as lobby, elevators, etc., internal parking),
- Locational characteristics (distance by road to the nearest freeway, straight line distance to the CBD),
- Value assessments (assessed land value per square foot, 1974 property tax rate of assessed property value, annual property tax bill),
- Accessibility (average commuting time by auto from home to building, percentage of employees who commute by bus).

Eda ustaoglu (2003) implied that His model is successful in explaining the supply and demand influences in the determination of market rents on office space.

In the study of Hough and Cratz (1983) they were concerned in the demand side of office services by including the architectural quality variable into their model. They constructed the hedonic model with the data (collected in 1978) including 139 office buildings in the Chicago CBD. Their model can be written as:

$$R = R(Z_1, Z_2, \dots, Z_n) \quad (3.6)$$

The dependent variable R is the rental price for the office space in the building and the independent variables Z_i consist of:

- Locational characteristics (distance from the building to the CBD, distance from the building to the nearest railroad station),
- Building characteristics (building's age, total gross floor area in the building, average rentable area per floor, number of floors in the building, number of public parking spaces, whether or not the building contains a restaurant, a conference room and a snack shop),
- Design quality (whether or not the building has been designated a national or Chicago landmark, whether or not it has received an award for aesthetic architectural excellence).

But according to in the result of their study they mentioned that the variables measuring for architectural quality are insignificant.

Webb and Fisher (1996) in there model they use net effective rent as their dependent variable. Eda ustaoglu (2003) says they were successful in explaining the trends in office markets with the formulation of effective rent index. They emphasized that effective rents are much better than asking rents in order to explain the effects of rent determinants on commercial-office rents. They suggested that effective rent indices can reflect the changes in real estate market conditions, so they estimated an effective rent index²³ by using the lease data over 1985-91 periods for the Chicago metropolitan area. They constructed the model:

$$\text{Eff Rent } i,t = f(\text{Building } i, \text{ Tenant } i, \text{ Space } i, \text{ Terms } i, \text{ Time } i,t)$$

In their study they highlighted that effective rents are much better than asking rents in order to explain the effects of rent determinants on commercial-office rents.

Wei CHIN (Henry) (2003) in his study focused on the macro economic factors to build his model. He state in his study the models of office rents include both demand-side variables and supply-side variables. In the author's model, net office rents are used. Real GDP (GDP), the rate of unemployment (U), interests rates (IR), lending rates (LR), consumer index (CI) and service sector output (Ser) are the proxy variables of demand-side. Changes in floor space (FS) are the proxy variables of supply-side.

Substituting the above variables into equation, it emerges as

$$\text{Rents}_{it} = A + B * \text{GDP}_{it} + C * \text{U}_{it} + D * \text{IR}_{it} + E * \text{LR}_{it} + F * \text{CI}_{it} + G * \text{Ser}_{it} + H * \text{FS}_{it} + e$$

In his study finding he mentioned that the empirical results show that the explanatory power of the model is not very high. This may partly be explained by the fact that some determinants of office rental values in these South-east Asian cities cannot be quantified, and so cannot be included in the model.

Eda ustaoğlu (2003) cited the work done by Brennan, Cannaday and Colwell's (1984) study is the first one which follows this procedure. Their study improved earlier models by including the actual transacted rental values of individual office units. They also extended the number of key explanatory variables by employing the lease data. However, an important criticism for their study became a current issue: Although they used a large number of independent variables, their sample size of 29 is too small.

$\text{RENT/SF} = f(\text{X1}, \text{X2} \dots \text{Xm})$ Where RENT/SF is the rental rate per square foot per year and $\text{X1} \dots \text{Xm}$ are the explanatory variables

Lease features

The Physical characteristics of the building

Occupancy rate of the building

Physical characteristics of the unit

RESEARCH METHODOLOGY

This research can be classified as quantitative research which attempt to examine significant determinants of office use property rents. The main purpose of this study is to answer the questions. What are the significant factors determine the rent of office use properties in Colombo 03, Colombo 3 area is mainly focused for the study. Colombo 03 includes Colpety, Bambalapitiya and a part of Slave Island. Colombo 03 is a multi-religious and multi-ethnic area. Colombo 03 area is one of emerging commercial arena in Colombo district. This is because it is the area which covers the main two emerging commercial streets in Colombo, i.e. Galle road and Duplication road. Also Colombo 03 can be kwon as part of the CDB of Colombo city. A vast majority of private and public institutions maintain their head offices and several branches in the Colombo city (Ariyawansa, 2008; Edirisinghe, 2004). Banking, Financial Services & Insurance (BFSI) and IT/ITES sectors are the top two office leasing sectors in Colombo. There for Colombo 03 is a vital sub market considering office use properties in Colombo city.

As previous empirical studies suggest that Hedonic Regression analysis provide basic frame work for this type of study. Clapp (1980), Hough and Cratz (1983), Eda ustaoğlu (2003). There for study base on the Hedonic Regression analysis as basic frame work. But not perform a hedonic price model. In this study identification of determinants of office rent are based on previous empirical studies. They can be categorized as four factors used by previous studies and identify their relationship by using correlation analysis.

H1a: There is a relationship between Structural factors and rent of office properties

H1b: There is a relationship between Facilities of the Building and rent of office properties

H1c: There is a relationship between Locational Factors and rent of office properties

H1d: There is a relationship between Lease Agreement and rent of office properties

Population of this study is office use properties located in the Colombo 03 area. In this study specially focused on the office properties locate in the area beside the Galle road, R.A De Mel road. Therefore, sample from each office block is selected according to systematic sampling, however it is important to note that the sample selected from each neighborhood is distributed homogeneously.

Total number of office locate in Galle road area	= 341
Total number of office locate in R.A De Mel road area	= <u>110</u>
Total	= 451

Source: CMC 2014 rating data.

According to Jones Lange LaSalle data base there are (33) Grade A, B, C Class building in Colombo 03 area.

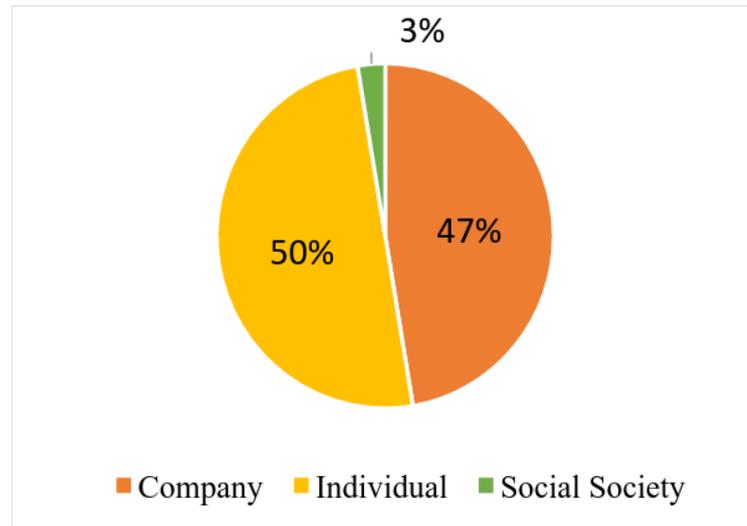
Eda ustaoglu (2003) and Oven and Pekdemir (2005) use Grade A, B, C Class as sample in there researches. Wai yee (2004) had use Jones Lange LaSalle data base in his research to determine the sample.

Data Collection

The office property data referring to the period July 2015 to October 2015 was utilized in the study. In the data collection process quantitative data were collected. To collect quantitative data, the author has distributed (38) questionnaires among the above selected (38) enterprises and data from those enterprises were collected by visiting their business premises. Author had referred some of the official publication of Department of National Planning of Ministry of Finance and Planning and Department of Census and Statistics-Sri Lanka in relation to the business sector, Colombo Municipal Council. In this way, primary and secondary date could be collected.

DATA ANALYSIS AND RESULTS

According to figure no.1 most of the buildings in sample are owns to individual persons. That is 50 percent out of total sample. 47% of the buildings in the sample own to companies and 3% owns to Societies



Type of the land lord of the building

Figure 1- Type of the land lord of the building

Source – Prepaid by author

According to the data set majority of the land lords are Muslims and it is 69% of the total sample. Also 26% of land lords in the sample are Sinhalese. Lowest percentage of 5% in the sample is Tamil Land Lords

Table 2 - Type of the building

Type	Frequency	Percent	Valid Percent	Cumulative Percent
Office	19	50.0	50.0	50.0
Office + Retail	15	39.5	39.5	89.5
Mix	4	10.5	10.5	100.0
Total	38	100.0	100.0	

Source – Prepaid by author

According to the table 2 majority of building in the sample falling under pure office category. That is 50% and 39.5% building use as offices and retail purpose. Also mix use properties represent 4% in total sample.

Type of occupiers in the buildings

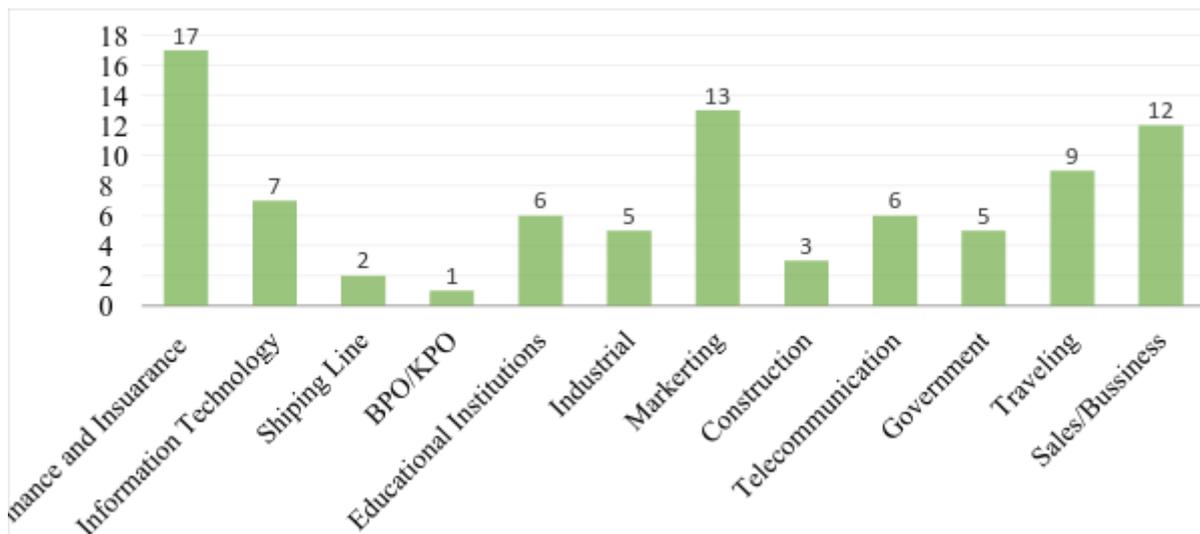


Figure 2- Type of occupiers in the building

Source – Prepaid by author

As above figure 2 explains majority of occupiers in the sample buildings are Bank, Finance and Insurance companies and it is 17. Also marketing, sales/business, traveling and information technology companies have higher frequencies. That is 13,12,9 and 7 respectively. Further there are considerable amount of government firms and educational institutions in the sample.

Table 3 –Age distribution of the buildings

Age	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 years	5	13.1	13.1	13.1
6years - 10years	8	21.1	21.1	34.2
11years - 15years	15	39.4	39.4	73.7
16years - 20years	2	5.3	5.3	78.9
Above 20years	8	21.1	21.1	100.0
Total	38	100.0	100.0	

Source – Prepaid by author

According to the table 3, it shows that the age distribution of sample buildings. The majority respondents belong to represent the age category of 11-15 and it can be seen as 39.4% of total respondents. Second highest age category belongs to age category years between 6-10 it as

represent 21% of the total respondents. In addition to that there are 13.1 respondents belongs to age category below 5 and only 5% of buildings are in the age of 16 - 20.

Table 4– Total leasable area of the buildings

Leasable Area	Frequency	Percent	Valid Percent	Cumulative Percent
Below 5000 sq.ft	1	2.6	2.6	2.6
5001 sq.ft – 10000 sq.ft	7	18.4	18.4	21.1
10001 sq.ft – 20000 sq.ft	14	36.8	36.8	57.9
20000 sq.ft – 30000 sq.ft	6	15.8	15.8	73.7
Above 30000 sq.ft	10	26.3	26.3	100.0
Total	38	100.0	100.0	

Source – Prepaid by author

As above table 4 presents majority of building have 1000sq.ft – 20000sq.ft and it is 36.8% and further it shows 5% of buildings are below 5000sq.ft. Above 30000sq.ft building represent 26.3% of sample.

Table 5 – Rent per sq.ft

	No. of Units	Minimum	Maximum	Mean	Std. Deviation
Rent (Sq. ft.) (LKR)	38	60	195	125.32	32.11

Source – Prepaid by author

According to the Table 4.3, it represents details about rents. The variable is normally distributed with mean value of 125.32 and Stranded Deviation of 32.11

Reliability Test Results

This part is mainly combined with the confirmatory analysis. For these types of analysis it is very important to measure the reliability of data before move to the analysis. The following table 6 shows the reliability of data collected for this study. The questions which are used to measure the satisfaction are likert scale questions. The reliability of a measure is established by testing for both consistency and stability. Consistency indicates how well the items measuring the concept hang together as a set. The internal consistency reliability is measured through Cronbach's alpha. Cronbach's alpha is a reliability coefficient that indicates how well the items in a set are positively correlated to one another. The reliability of measurement scale was tested by Cronbach's Alpha and the validity was tested by EFA. Based on the Reliability Statistics Table, Cronbach's Alpha values of all variables should be **above 0.7**. If

get fail Cronbach's Alpha value above 0.7 the factors consist with "Corrected item-Total correlation" values were **less than 0.3** should be deleted.

Table 6 – Reliability of the data

Variable	Cronbach's Alpha	No of Items
structure of the Building	0.933	2
Facilities of the building	0.844	10
Locational Characteristic	0.690	3
Lease Agreement	0.989	2

Source – Prepaid by author

Table 7– Distributions of the Variables

	Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	Statistic	Df	Sig.	Statistic	df	Sig.
Structural Factors of the Building	.251	34	.000	.885	34	.002
Facilities of the building	.126	34	.191	.950	34	.120
Locational Characteristic	.241	34	.000	.908	34	.008
Lease Agreement	.164	34	.021	.888	34	.002

Source – Prepaid by author

According to the results of normality test which are shown in table 7 to check the normality of the responses, 95% is used for confidence interval for mean. Then it is need to compare the "p value" with " β value". According to the results in table 7 "p value" for factor is below than the β value ($\beta= 0.05$) are structural, locational and lease. Therefore the responses for all questions are not normally distributed. Thus facility variable "p value" greater than the β value ($\beta= 0.05$) there for it can be consider as normally distributed.

Since data are not normally distributed shows in table 7 Spearman correlation was used and using nonparametric correlations bivariate analysis was conducted to measure the correlation. Factors which are normally distributed shows in table 7 Pearson correlation was used and using parametric correlations bivariate analysis was conducted to measure the correlation. Correlation was measured since author expects to examine the relationship between independent and dependent variables and therefore regression analysis was examined to measure the impact of independent variable on dependent variable.

Table 8 – Correlation between Independent Variable and Dependent Variables

Factors	Pearson correlation	Spearman correlation	Sig. value
1 Structural Factors of the Building	-	-.368	.023*
2 Facilities of the building	.672	-	.000**
3 Locational Characteristic	-	.016	.923
4 Lease Agreement	-	-.615	.000**

*p.05 ** p.01

Source – Prepaid by author

According to the Spearman correlation test Facilities of the building and Lease Agreement variables are significantly correlated with Rent variable in 0.01 significant level while Structural Factors of the Building variable is significantly correlated with Rent variable in 0.05 significant level

Table 10: Model Estimation Results

Model	Unstandardized Coefficients		Standardized	t	Sig.
	B	Std. Error	Coefficients		
(Constant)	43.034	67.524		.637	.052
Structure	-11.006	5.176	-.270	-2.126	.042*
Facility	20.622	6.239	.541	3.305	.003**
Locational	16.445	13.055	.157	1.260	.218
Lease	-4.568	4.775	-.158	-.957	.347

*p.05 ** p.01

*Source – Prepaid by author***Table 11: Anova Table**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	21721.586	4	5430.397	10.907	.000**
Residual	14437.973	29	497.861		
Total	36159.559	33			

*p.05 ** p.01

Source – Prepaid by author

The Viability of model as a whole indicated by F- ratio and it was recorded as 10.907 with less than 0.05 significant level indicating the model is significant model.

Table 12: Model Fit

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.775 ^a	.601	.546	22.31280

Source – Prepaid by author

R square shows how much the model is fit with the data set and R square value is 0.775. It means the model is significantly fit with the data set.

CONCLUSION

To conclude, the findings of this research turn to suggest that Facilities of the building and rent of the building has strongly positive relationship and when consider about the location characters there is no relationship between rent. According to the correlation analysis it can be identify facility of the building, lease characters and structure characters are the key determinants in supply perspective. When consider about the model one estimation results it show that among four variables Structure of the building and Facilities of the building are Significant in 0.05 significant level other independent variables are insignificant. There for Facilities of the building and structural factors are the most significant factors when determining the office rent in the Colombo 03 area. In future, the researcher intends to expand the number of sample and independent variables in the survey to to meet the requirement of a more sophisticated statistical analysis such as multiple linear structural equation.

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