
DETERMINING AMENITY VALUES OF GREEN OPEN SPACES IN SHOPPING MALLS: *Case Study of Ayala Greenbelt Park*

(Thesis Paper in Master of Architecture)

Marie Stephanie N. Gilles¹
steph.gilles529@gmail.com

Abstract

This paper aims to approximate the amenity values of parks inside malls and evaluate their sustainability, approaching it from the contingent property valuation angle, using hedonic price modeling. Through a case study of restaurants inside malls (interviews and mapping inventory), it establishes the correlation between restaurant distances to park amenities. It is argued that the retail shops or restaurants located near the parks have a higher probability of ROI (return on investment) despite higher rental fees, based on volume of foot traffic generated by this amenity. To validate this assumption, Geographic Information Systems (ArcGIS) is used as a tool in measuring these observations. Factor analysis among the variables is performed to determine those that are significant, after which these are entered into a regression analysis to corroborate initial assumptions and hypotheses regarding the inverse proportionality between ROI and zoning/ distance and view to park, i.e. the nearer the shops are to the park, the higher the ROI.

It is the researcher's hope that, having the parks' economic viability and sustainability established, it will encourage urban planners and mall developers to allocate more generous portions of green open space, thereby contributing to the general welfare of its users and ultimately enhancing the sense of place and communion with nature.

Key Words: Determining amenity values, Green open space in malls

I. Introduction

In a consumerist society where practicality and profitability are regarded as foremost in the scale of priorities and where space allocation for rentable units is usually at a minimum in order to maximize revenue for

¹ Marie Stephanie Gilles is currently taking up a diploma course at University of the Philippines School of Urban and Regional Planning after finishing her Master of Architecture degree at College of Architecture of the same university. She took a 3-year course in Italy under the *Centro Internazionale di Studi* on Classical Architecture and Humanities. She had presented papers in local seminars and conferences abroad. A member of the Philippine Green Building Council and Green Architecture Advocacy of the Philippines, she incorporates the principles of green architecture into her projects.

the developers (whether housing or commercial ventures), there is a need to pause and consider the monetary value of what generally are regarded as non-revenue-generating amenities offered to the public for free such as parks and open spaces.

Numerous real estate empirical observations on determining property values have been applied to housing, where proximity to parks dictates a higher market value for potential homeowners who are willing to pay a premium to enjoy this amenity. However, *there is hardly any study available on determining amenity values of these parks inside malls or commercial developments, mainly because these are dictated by and exclusive to their respective private developers and would entirely depend on their product branding and established priorities in space planning, classified competitive information that is not made readily available for public consumption.*



Figure 1. Comparison of Types of Civic Spaces.

Moreover, although these civic spaces to a certain extent belong to the public realm, these are nevertheless privately-owned, precluding possibility of fiscal attention from government in the form of subsidies or tax shields, as in the case of public parks. Depending on their location, whether in a CBD of prime property or in the outskirts of a city, their values can be extremely high such that a large allocation of space could mean sunk investment or lost business opportunity for the mall developers, owing to the conversion of use from potential revenue-generating units to common areas made accessible for the public to enjoy at no added cost to these users.

Real estate market value will be the most direct measure of the economic value of open space, which is the cash price that a buyer pays a seller in an open and competitive market. In urban or urbanizing regions, where highest and best use (as determined by the market) has usually been

development, as in the case of Makati where Greenbelt and Glorietta parks are located, or of Quezon City where SM Sky Garden and TriNoma Roofdeck Garden are found, the open space value of land should be separated from its development value. Paradoxically, developing these spaces into parks (though non-revenue generating) would lead to an appreciation of their economic value as they become nodes of social interaction and focal points of interest.

II. Research Problem

The main research problem hinges on finding out to what extent parks in shopping malls contribute to the increase in level of patronage of shops and restaurants within proximate distance to the park.

As for the sub-problems, the following questions were formulated:

- In examining the costs of land, development and maintenance of these parks, how do the mall developers get a return of their investment considering the lost business opportunity for revenue-generating units and the fact that these amenities are offered to the public at no added cost?
- How can the value of the land being occupied by the park (per square meter) be monetized in terms of: capital investment, operations/maintenance expenses, cost of improvements, amenity values and eventually, return-on-investment (ROI)?
- What is the strength of relationship between the monthly rental fees of these tenants largely affected by their proximity to the park, i.e. the closer to the park, the higher the rental? How do these fees compare with shops or restaurants located inside the mall with no views to the park?
- How significant is the correlation between level of patronage or foot traffic and distance to the park?
- To what extent does the park act as a node, i.e., is it a strong magnet for customers, generating volume of foot traffic for the shops and restaurants located contiguous to it?

III. Hypothesis

In evaluating the sustainability of these green open spaces in mall developments, the basic assumption is that the park acts as a magnet to generate volume of foot traffic which spills over to the shops and restaurants located nearest to it, especially those found at the ground floor, immediately contiguous to the open area. It is hypothesized that the shops and restaurants nearest the park are charged a premium rental fee per month. Nevertheless, despite the higher fees, they are able to recover their expenditures in a few weeks due to their strategic location and the volume of foot traffic generated by these nodes or magnets.

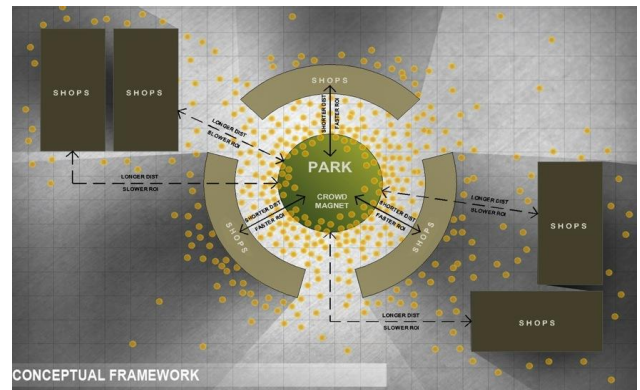


Figure 2. A two-dimensional Conceptual Diagram Model of the Sustainability of Parks in Malls.

IV. Research Methodology

Research Design: 3 Phases

Phase 1: Mapping Inventory/ Comparative Analysis

A handful of initial case studies were done as a background, specifically on the following: (a) Ayala Greenbelt Park in Makati, (b) Glorietta Parks in Ayala Center Makati, (c) SM North Sky Garden and (d) Trinoma Roof Deck Garden. However, it is the Ayala Greenbelt Park which will be the main focus of study, as it has the highest percentage allocation of green open space in relation to the building footprint and the entire property area.

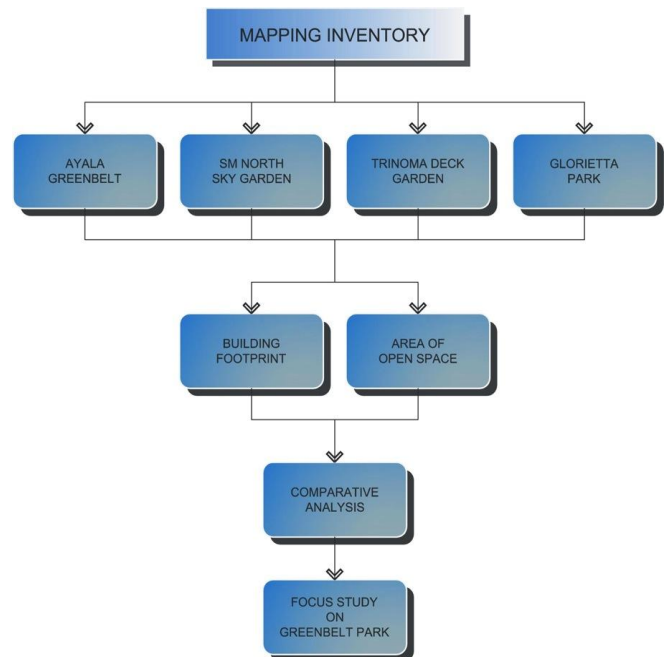


Figure 3. Diagram showing Flow of Data Gathering and Analysis for Phase 1.

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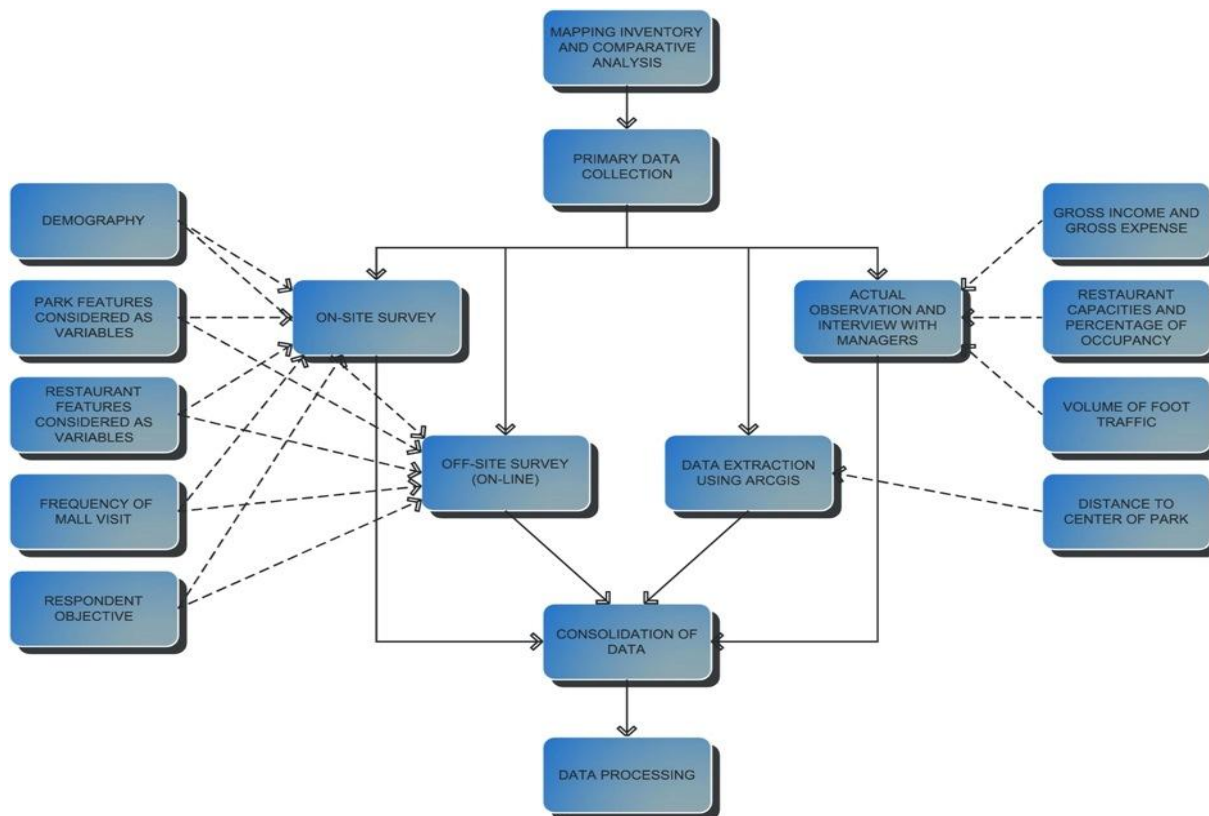


Figure 4. Diagram showing Flow of Data Gathering and Analysis for Phase 2.

Phase 2: Questionnaire Surveys / Interviews

Data gathering in Phase 2 consisted in questionnaire surveys from restaurant customers and interviews from mall managers/ owners of restaurants located near the Greenbelt park. These constitute the qualitative research based on descriptive statistics, while the data analysis was mostly quantitative in approach, as measurements of distance to park and their effects on ROI required statistics regression analysis to quantify the strength of correlation among variables.

Phase 3: Factor Analysis and Regression

A shortlist of restaurants and their rental fees was generated, with the volume of customers counted in relation to their proximity to the park. A computation of the footprint area of these open spaces in relation to the total lot and the total commercial development was derived from mapping inventory, the use of CAD and GIS software. Based on review of literature, interviews and actual observation, the variables which have a strong bearing (strong predictors) on the amenity value of Greenbelt park were determined, after which a correlation among these variables was established. For the correlational strategy, using the Contingent Property Valuation Method, a formula equation combining the variables and their relation to the amenity value was derived.

After getting primary data both from interviews and statistical description from the survey questionnaires, the values were applied to the Hedonic Price Modeling for regression. In this case, the hedonic application was used for determining or at least approximating the economic value of Greenbelt park.

A hedonic model of park-in-mall values was expressed in 2 categories, where one is for the tenant and the other is for the mall owner, as follows:

Park Values for the Tenants

$$PV_{Tenant} = f(Dist, RF, VP, FQ, RA, PA); \text{ where}$$

PV is the amenity value of the park measured in terms of ROI (Return-on-Investment), which is the variable dependent on the following:

Dist distance from the center of the park and forms part of the location-specific characteristics; distance to the park as a significant predictor, inversely proportional to the ROI, meaning, the closer the tenant is to the park, the higher the rate of ROI;

VP Volume of Persons or foot traffic generated by the landscape amenity;

FQ Food Quality;

RF Rental Fees per month;

RA Restaurant Amenities (e.g. wifi, ambience of the place, food service); and

PA Park Amenities (e.g. size, location, landscaping features, covered areas, lounging space, lighting, water features).

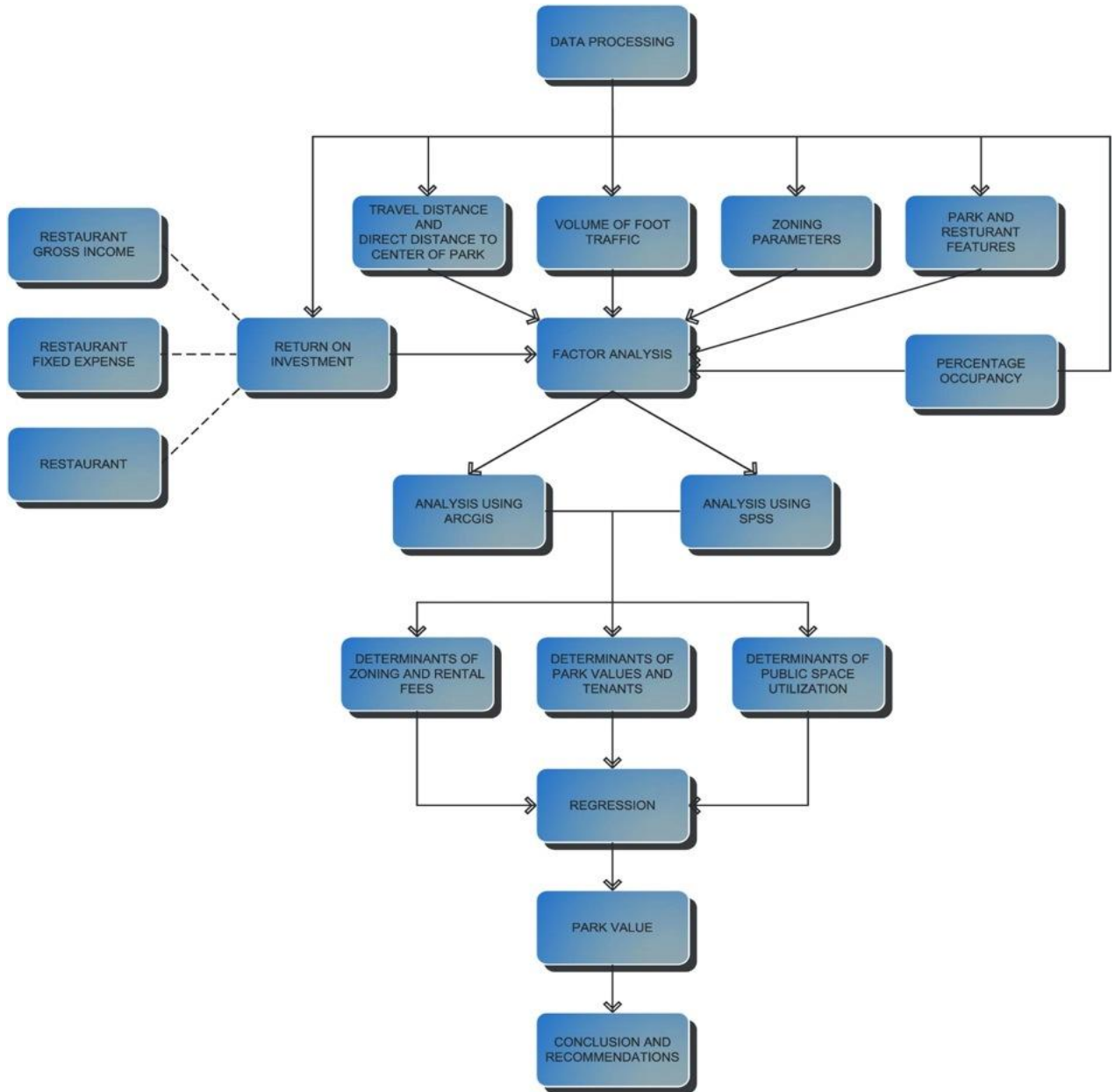


Figure 5. Diagram showing Factor Analysis of Variables and Regression Process for Phase 3.



Figure 6. Diagram showing Correlation of Variables for Park Value from Tenants' Viewpoint.

Thus, the linear equation for the hedonic price modeling is as follows:

$$y = a + \beta_1x_1 + \beta_2x_2 + \beta_3x_3 + \beta_4x_4 + \beta_5x_5 + \dots \beta_nx_n + \epsilon$$

This equation is applicable for all the regression models wherein:

Y = dependent variable

a = coefficient of regression

β = coefficient of 1st parameter (independent variable 1)

x = independent variable 1

ϵ = error term

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For the financial viability variables, the following equations are drawn:

- Net Income (NI) = Gross Sales (GS) less expenditure (Exp)

$$NI = GS - Exp$$

- Expenditure (Exp) = Fixed Cost (FC) + Variable Cost (VC)

- Fixed Cost (FC) = Operations Costs (OC) + Maintenance Costs (MC)

$$Fixed\ Exp = OC + MC$$

Operations Cost = salaries, utilities (electricity, telephone, water), rental fees, transportation/delivery costs

Maintenance Cost = repairs and maintenance of equipment/ vehicles and building interiors

- Variable Cost (VC) = Cost of Goods Sold (CGS) + 5% of Gross Sales (GS)

$$CGS = 35\% \text{ of gross sales}$$

Park Values for the Mall Owners

$$PV_{Mall} = ROI_{Mall} = (a) > [(b) + (c)]$$

- Revenues (Rev) of the Mall = [percentage of gross income of tenants (5% GI) + monthly rental fees (MRF) + Other Income (OI)]

$$Rev_{mall} = 5\% GI + MRF + OI \quad (a)$$

- Capital Outlay (CO) = [cost of land investment (LIn) + land improvements, i.e., trees, soil, utilities, etc. of the park (LImp)]/ Time (T)

$$CO = \frac{[LIn + LImp]}{T} \quad (b)$$

- Expenditure (Exp) = operations (OC) + maintenance costs (MC)

$$Exp = OC + MC \quad (c)$$

The primary data gathered from survey questionnaire responses and interviews were analyzed using Statistical Package for Social Sciences (SPSS) and other software used in statistics such as SAS and STATA to get the appropriate tests and results based on the data set and objectives.

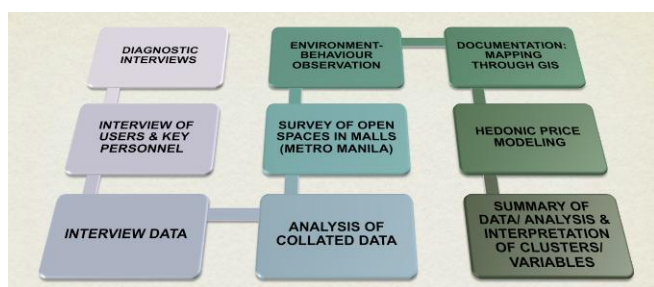


Figure 7. Process in Collecting and Analyzing Primary Data.

Respondents consisted of actual on-site customers of Greenbelt 3 restaurants. Through convenient sampling, the researchers approached the potential respondents already seated in their respective restaurants of choice. Preference was for restaurants with more than 60% occupancy. After filling up the forms, the researchers would indicate the

location of restaurant (or the park) from where the survey was conducted.

V. Summary of Findings / Results

A. Phase 1: Geographical and Social Considerations

The quantitative comparative analysis is based on footprint area taken from satellite maps. A computation of the area utilization is itemized according to the following: (1) building footprint area and (2) total open spaces within lot (TOSL), which is further broken down into unpaved surface areas (USA) and impervious surface areas (ISA).

Since the impervious surface areas refer to the parking lots, access roads, driveways and circulation areas, pedestrian walkways, cemented grounds, etc., the computation of the park or green open spaces was limited to the unpaved surface areas with actual trees and plants contained in its environs.

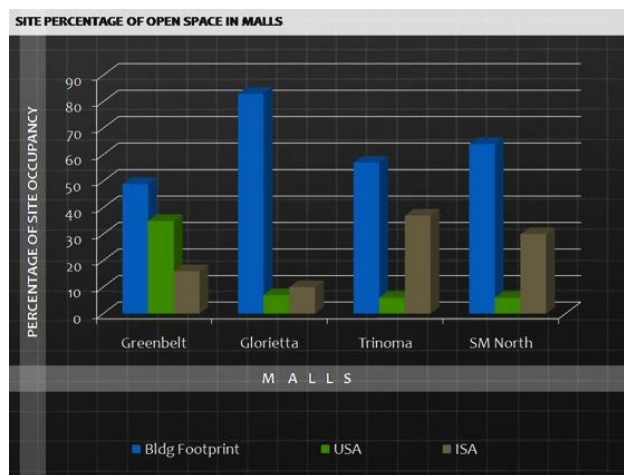


Figure 8. Comparative Chart showing the Allocation of Building Footprint vs. Total Open Space of the 4 Malls.

A comparison of the case studies regarding space allocation of the 4 Malls (Greenbelt Makati, Glorietta, SM North and TriNoma) shows the biggest ratio of park areas to total lot area in Greenbelt Makati, at 33-35%. The 3 other malls allotted a range of 5-7% of green open space in relation to total lot area. Building footprint ratio to open space is largest in Glorietta at 83%, hence, the decision to focus on Greenbelt Park.

The Greenbelt Park has a total of 3.3 hectares, a substantial area coverage given the total lot area of Ayala Malls at 11 hectares. This allocation of space approximates 30% of the total lot area of Ayala Greenbelt Development. Compared to the building footprint area, the Unpaved Surface Areas (USA) that constitutes the park is equivalent to 35%, while the Impervious Surface Areas (ISA) amounts to about 16%.

As advertised in the mall's brochure (courtesy of the management), the Ayala Greenbelt Malls have average daily shopper traffic of 120,000 persons, a total gross leasable area of 800,000 sq. ft. and over 600 retail, food and entertainment outlets.

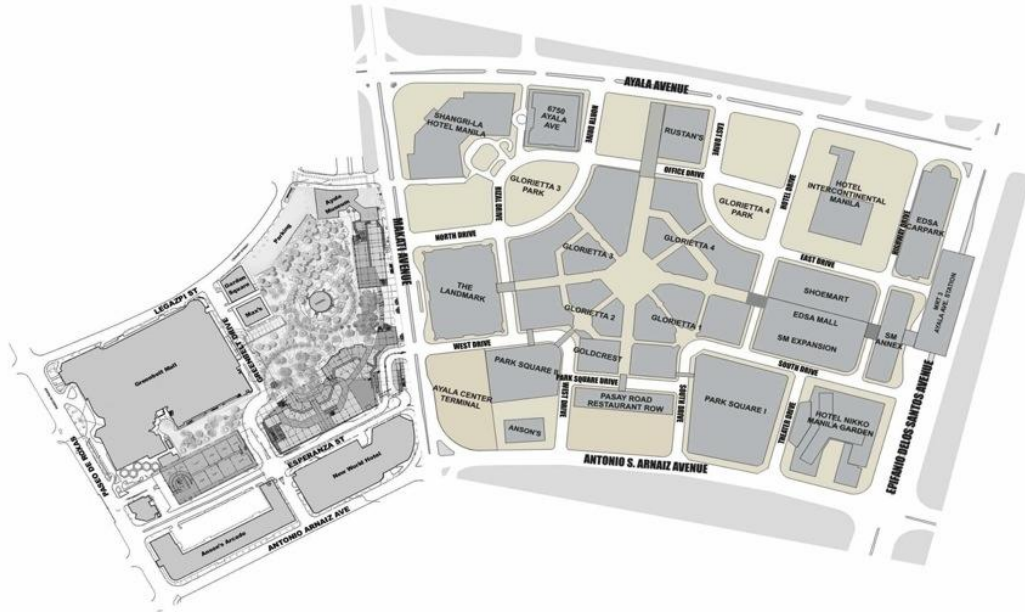


Figure 9. Map showing location of Greenbelt Park in relation to the Ayala Greenbelt and Glorietta Malls Development. *Source:*



Figures 10 and 11. These two aerial photos were taken during the period from 1960 to 1970. The main thoroughfares shown in these photos are: Ayala Avenue, EDSA, Makati Avenue and Esperanza Street. All of them show the presence of the undeveloped Greenbelt Park, a thick patch of trees and vegetation (a) at bottom right, and (b) at bottom left. *Source: Ayala Center Estate Association*

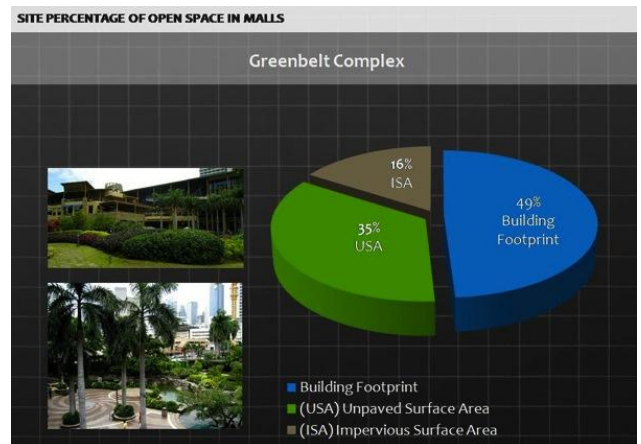


Figure 12. Ratio of Open Space to Building Footprint – Greenbelt Park. *Source: Bennitt + Design Group*



Figures 13 to 16. Greenbelt 3 Restaurants: Café Havana (G/F – Zone 1), Banana Leaf (2/F – Zone 2), Seafood Island (3/F – Zone 3) and Red Mango (3/F, Zone 3). *Sources (from internet): www.tripadvisor.com.sg, abetterchancefoundation.org.ph, and www.redmangointernational.com*

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RESTAURANTS STUDIED IN DETAIL									
No.	Establishment	Location	Floor Level	Capacity			Area (sqm)		
				Total Capacity	Indoor	Outdoor	Indoor	Outdoor	Total
1	Coffee Bean	GB 3	G/F	135	55	80	213	40	253
2	Starbucks	GB 3	G/F	114	44	70	134	63	197
3	Cafe Havana	GB 3	G/F	160	48	112	189	82	271
4	Seattle's Best	GB 3	G/F	155	35	120	97	90	187
5	Banana Leaf	GB 3	2/F	100	68	32	159	24	183
6	Serenitea	GB 3	3/F	28	4	24	22	26	48
7	Figaro	GB 3	3/F	52	40	12	90	15	105
8	J.CO Donuts and Coffee	GB 3	3/F	44	32	12	136	19	155
9	Krocodile Grille	GB 3	3/F	250	150	100	187	58	245
10	Seafood Island	GB3	3/F	110	50	60	110	50	60
11	Red Mango	GB3	4/F	52	35	17	55	38	93

Table 1. Summary of Restaurants with Respondents showing Capacity and Floor Area.

B. Phase 2: Data from Questionnaire / Interviews

Above is a tabulated summary of the restaurants where most respondents were obtained from.

There were 2 types of surveys conducted depending on mode of data extraction: (a) on site - within Greenbelt Complex premises, using the printed questionnaire survey form, and the other set, (b) off-site/online - where the respondents were asked to fill up an electronic survey form. From the months of October up to December 2012, a total of 346 responses were gathered from on-site data collection. However, after filtering the survey forms (removing those that had several blanks or unanswered items), about 327 were considered valid responses. In January 2013, an online survey was conducted, and a total of 154 responses were gathered. Eliminating those who left blank more than 3 questions, the valid responses were narrowed down to 146. All in all, total number of respondents was 492, but 473 valid responses were retained.

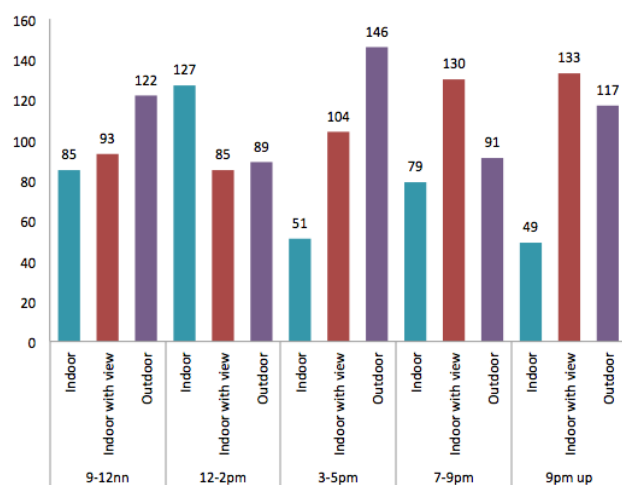


Figure 17. Bar Chart Showing Dining Preferences on Different Timeslots (On-site Survey).

Each respondent was asked to indicate their restaurant of choice for the various time slots (9-12 AM, 12-2 PM, 3-5 PM, 6-8 PM, and 9 PM onwards).

There is a strong preference for dining outdoors for breakfast/brunch (122 respondents) and afternoon from 3:00 to 5:00 PM (146 respondents, this is with particular reference to cafes fronting the park, where they can also enjoy light snacks and coffee or tea). For dinner and after dinner, the majority expressed preference for either dining indoors with a view to the park, or outdoors.

A total of 4 interviews from the top level executives of Ayala Land and Greenbelt Mall management were conducted. Interviews were conducted with the VPs, managers and the chief architect, which provided insight on the history and paradigm shift to alfresco (outdoor) dining in Makati despite the tropical climate. Among the restaurant managers/supervisors, however, the author managed to interview 11, with 6 that were recorded providing more substantial information. The purpose of the interviews was to obtain data on the economic aspects of the restaurants which will be used in the quantitative analysis relating to ROI, rental rates, peak hours and percentage occupancy. These will complement the data obtained from the surveys rating the park amenities and restaurant features. Some managers were generous enough to disclose the breakdown of expenditures, i.e. salaries, operations/maintenance expenses, costs of goods (food & beverage), common area dues (security, janitorial services, waste disposal, building costs) as well as the revenues (gross sales, net income, ROI), which were a great help for this section of the quantitative analysis.

Based on a series of interviews and actual observations, 4 zoning categories were drawn up. These zones coincide with what Ayala Management calls "prime" and "super-prime" areas. In principle, according to Greenbelt Mall manager, all the shops in Greenbelt 3 are "prime". These enjoy the amenity value of the park and they benefit from the view to the landscaped areas. Those that are at the ground floor, however, are considered "super-prime", owing to the volume of foot traffic generated with all the

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ingress/egress points plus the proximity and direct access to the park. Those located at the second floor may still be considered part of the “super-prime” areas since these benefits from the flow of customers coming from the elevated walkway connecting Greenbelt to the rest of the Ayala offices and Landmark/Glorietta Malls all the way to EDSA MRT. The shops at the 3rd and 4th levels can be considered “prime” as these catch the spillover of persons coming from the cinemas at the 4th level.

For purposes of comparative analysis, we have assigned the following zoning categories:

Zone Category	Description/ Parameters
Zone 1	Ground floor restaurants with indoor/ outdoor seating in Greenbelt 3 that have direct access to the park and very high volume of foot traffic
Zone 2	Second floor restaurants with indoor/ outdoor seating in Greenbelt 3 that have a fairly good view to the park and high volume of foot traffic
Zone 3	Third and fourth floor restaurants with indoor/ outdoor seating in Greenbelt 3 that have some view to the park and moderate volume of foot traffic
Zone 4	Restaurants that are distant from and do not have a view to the park (e.g. indoor restaurants in Greenbelt 1) with moderate volume of foot traffic

Table 2. Zoning Categories with Specific Description/Parameters.

From the zoning parameters, a series of tables were drawn which reflected the following: volume of foot traffic, area of restaurants, capacity and percentage occupancy, rental rates, itemized expenditures and ROI. These data were used as basis for Phase 3 statistical analyses.

In the zoning diagram, both the travel distance and the straight distance were recorded. However, for purposes of analysis and regression, straight distance was opted since it represents the access to view of the park measured until its center more than direct pedestrian access, where travel distance is more appropriate.

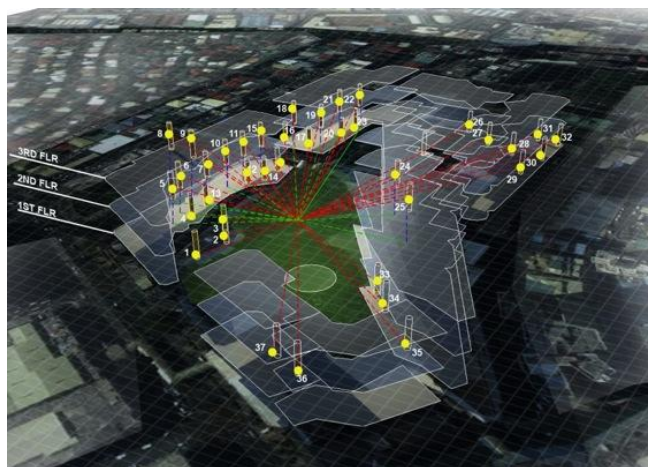
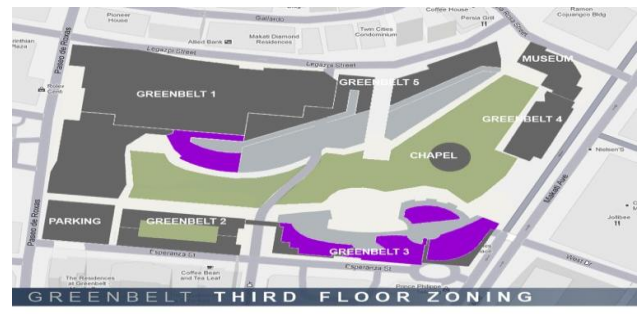


Figure 18. A 3D Exploded View of Greenbelt Floor Plans Showing Straight Distance from Restaurants to Center of Greenbelt Park.



Figures 19 to 22. Map of Ayala Greenbelt Malls categorized according to Zones 1 to 4.

C. Phase 3: Factor Analysis & Regression

Phase 3 consists mainly in the quantitative analysis of this research study, wherein two statistical methods were used: (1) the factor analysis and (2) the regression analysis.

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	Factor			
	1	2	3	4
good_food	.171	.302	-.106	.625
variety	.160	.181	.110	.748
food_presentn	.170	.038	.276	.612
ind_access	.395	.108	.312	.405
view_to_park	.470	-.005	.329	.207
furn_layout	.559	.148	.196	.252
privacy	.650	.317	.091	.096
lights	.731	.199	.207	.182
ambience	.486	.385	.154	.141
bright_colors	.525	.200	.407	.089
music_sounds	.485	.305	.330	.209
acoustics	.392	.276	.351	.137
friendly_service	.319	.564	.058	.255
prompt_response	.186	.800	.048	.242
wifi	.213	.522	.255	.086
smoking_area	.319	.058	.551	.099
affordable	.157	.622	.406	.083
storefront	.115	.524	.539	.113
social_status	.326	.234	.676	.125
size_space	.187	.483	.586	.080

Extraction Method: Principal Axis Factoring. Rotation Method: Varimax with Kaiser Normalization. Rotation converged in 18 iterations.

Table 3. Rotated Factor Matrix with Varimax/ Kaiser Normalization.

The objective of the factor analysis is to determine which variables from among the park and restaurant features are important as deemed by the survey respondents. The strong correlation that exists among the variables was determined and these were reduced to 4 dimensions, those considered most important, starting from Factor 1, descending in importance till the last.

Factor 1 (physical setup): view_to_park, furn_layout, privacy, lights, ambience, bright_colors, music_sounds, acoustics, independent access

Factor 2 (restaurant service): friendly_service, prompt_response, wifi, affordable

Factor 3 (restaurant image): smoking_area, storefront, social_status, size_space

Factor 4 (food quality): good_food, variety, food_presentn

The outcome of the Factor Analysis is that of reducing the 20 variables of the restaurant features into 4 factors or dimensions, wherein Factor 1 figures as the most important set of elements a customer is looking for in a restaurant. **View to the park is included in Factor 1.**

Regression Results: Using Distance as Dependent Variable (vs. Park and Restaurant Features: 80 Variables)

The objective of regression analysis is to model the relationship between a dependent variable and one or more predictor/ independent variables. We used a stepwise regression procedure to select a subset containing only significant predictors.

From the actual data tabulation of both on-site and online surveys, a merged data set consisting of 327 respondents was used as reference for the regression analysis of 80 variables using the values obtained from the questionnaire regarding park features and restaurant features.

distance	Coefficient	Standard Error	T Critical Value	P-value	[95% Confidence Interval]	
pa16	-46.1140	10.8023	-4.2700	0.0000	-67.3669	-24.8610
ra5	194.3065	53.5555	3.6300	0.0000	88.9386	299.6744
ra7	-79.0182	25.8034	-3.0600	0.0020	-129.7851	-28.2513
ra10	-41.2144	12.1296	-3.4000	0.0010	-65.0789	-17.3500
ra30	-24.2699	11.9015	-2.0400	0.0420	-47.6856	-0.8543
ra34	44.3936	14.0312	3.1600	0.0020	16.7878	71.9994
ra36	29.9716	14.4440	2.0800	0.0390	1.5538	58.3894
ra38	-39.6813	13.1010	-3.0300	0.0030	-65.4568	-13.9058
_cons	176.2003	12.9271	13.6300	0.0000	150.7668	201.6338

Table 4. Regression Results with Distance as Dependent Variable vs. Park/ Restaurant Features.

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After having performed the stepwise procedure, the number of variables was reduced to the 8 significant ones, the codes of which are in the following table:

Variable	Definition
pa16	High park smoking customer preference
ra5	Low food presentation customer preference
ra7	Low Independent access to restaurant customer preference
ra10	High view to park customer preference
ra30	High restaurant wi-fi access customer preference
ra34	High affordable restaurant customer preference
ra36	High inviting storefront of restaurant customer preference
ra38	High reflective of social class/status of restaurant customer preference

Table 5. Listing of Extracted Significant Independent Variables and their Codes.

Even in the regression analysis, it shows that the view to the park figures as a high preference among the customers. The interpretation of the relationship between this variable and distance to the park is interpreted as follows:

$\hat{\beta}_4 = -41.2144$: When a customer has a high preference of the view to Greenbelt Park, the distance of the restaurant decreases by 41.2144m relative to Greenbelt Park, holding all other variables constant.

Regression Results: Using ROI as Dependent Variable (vs. Zoning, Rental Fees, Restaurant Capacity)

The coefficient of multiple determination measures the percentage variation in ROI that can be explained by the independent variables. From Table 6 below, it can be seen that 94.71% is the R^2 while 94.63% is the adjusted R^2 . As said in the previous explanation of the coefficient, it is better to interpret the adjusted R^2 , and thus, it can be said that this is the BEST model we have, wherein ALL variables are significant. Meaning, 94.63% of the variation in ROI can be explained by all of the variables included in the regression equation which are: capacity, rent, zone1, zone2 and zone3.

Source of Variation	Sum of Squares	Degrees of Freedom	Mean Squares	Number of obs	=	327
				F Critical Value	=	1149.45000
Model	17929.95	5	3585.98945	p-value	=	0.00000
Residual	1001.44	321	3.11975126	R-squared	=	0.94710
				Adj R-squared	=	0.94630
Total	18931.39	326	58.0717404	Root MSE	=	1.76630

Table 6. ANOVA Table.

	Coefficient	Standard Error	T Critical Value	p-value	[95% Confidence Interval]	
capacity	0.01854	0.00369	5.02000	0.00000	0.01128	0.02580
rent	-0.00003	0.00000	-30.84000	0.00000	-0.00004	-0.00003
zone1	18.03012	0.36296	49.68000	0.00000	17.31604	18.74421
zone2	11.87875	0.35772	33.21000	0.00000	11.17498	12.58252
zone3	1.58226	0.43933	3.60000	0.00000	0.71793	2.44659
_cons	34.14409	0.27785	122.89000	0.00000	33.59745	34.69072

Table 7. Regression results.

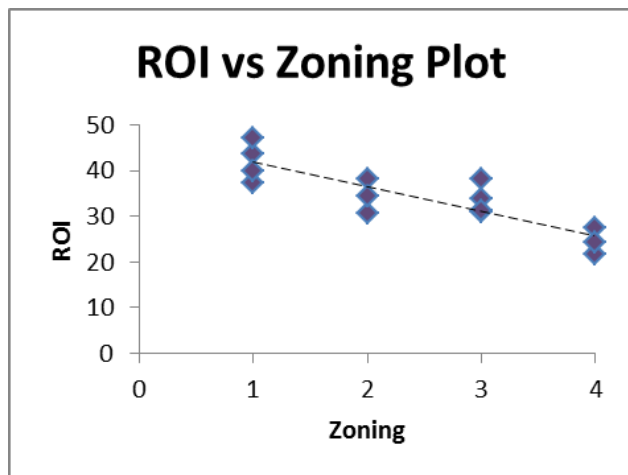


Figure 23. Plot Illustrating ROI vs. Zoning.

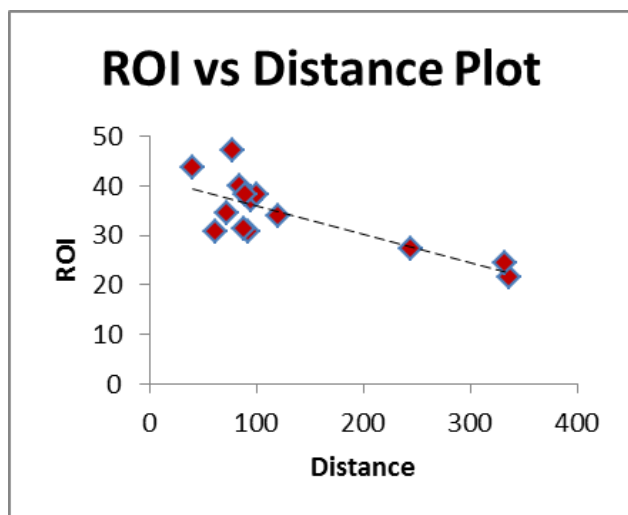


Figure 24. Plot Illustrating ROI vs. Distance.

By inspecting the graphs of the plots above, it can be seen that the Zoning and Distance are inversely proportional to the ROI, meaning, the nearer the distance of the restaurant or shop to the park, the faster the rate of ROI.

VI. Conclusion and Recommendations

The factor analyses show that the physical set-up with the feature of view to the park is a significant variable for the restaurant customers, alongside ambience, inviting storefront, social class image, furniture layout and bright colors, among others.

The regression results corroborate the initial hypothesis that the nearer the restaurants and shops are to the park, the higher their zoning classification (Zone 1 highest to Zone 4 lowest) which translate to higher rental fees. But due to an expected higher volume of foot traffic and the attraction of the park, these restaurants with higher rental fees are able to recover their investment and expenditures and have a faster rate of return (RR) or return on

investment (ROI). Using equations from hedonic price modeling, a rule of thumb is established among the correlated variables in the study of ROI, using volume of foot traffic, rental fees, zoning, capacity and percentage occupancy of restaurants vis-à-vis their proximity to the amenity (in this case, the park). An incremental pattern is shown by the regression tables, where increase or decrease in a certain variable affects the other aspects of the study by a concrete quantitative factor. Therefore, the relationship between distance to the park and ROI is a negative relation, inversely proportional to each other, since the lower the distance (the nearer to the park), the higher the rate of return. This strong correlation illustrates the economic and social sustainability of the Greenbelt Park from the point of view of the tenants as well as for the mall owners.

This research will contribute to mall developers and designers in their economic feasibility studies prior to setting up a commercial development and will be a guide in space allocation of green open spaces within the premises. As their sustainability (social, environmental and economic viability) as well as feasibility in space planning has already been validated by this extensive study, it will hopefully encourage urban planners and mall developers to allocate more generous portions of parks and landscape in the commercial master plan (whether footprint of the lot or floor area of the entire building).

It is endeavored that local codes and regulations be revised to mandate commercial establishments to allot a higher percentage of unpaved surface areas, from a staggering 5-10% to a minimum of 10-15% or even higher of Total Open Spaces within Lot (TOSL) and Total Lot Area (TLA). Section 803 of the The National Building Code (PD 1096) could be reviewed and revised to increase this space allocation and specify them as green open spaces and permeable surfaces instead of limiting it to the general classification of Unpaved Surface Areas (USA).

This will redound to the general welfare of its users, increase revenues and ROI for the mall owners, while improving the ecological balance of the environment, working towards increasing the ratio of green spaces per person and improving air quality as well as enhancing sense of place.

Repercussions of this study could enhance the “mall” experience in the Philippines, contributing to upgrading the lifestyle of shoppers and diners, with a view to greater interaction of customers with the natural environment, planting and nurturing the seed towards an earth-friendly consciousness in families: a blueprint for sustainable patterns and green lifestyles for the future of our planet earth.

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