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“QUALITY OF LIFE METRICS IN TERMS OF
FACILITIES AND URBAN REPUTATION: A CASE
STUDY IN THE CITY OF VENTANILLA, LIMA
PERU”

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Autor:

Sashenka Flor Tapia Gallarday

Asesor:

Arq. Jesús Giomar Antonio López Vásquez
<https://orcid.org/0000-0002-5402-0635>

Lima - Perú

JURADO EVALUADOR

Jurado 1 Presidente(a)	Carlos Alfonso Cerna Sifuentes	07759776
	Nombre y Apellidos	N° DNI

Jurado 2	Dante Ruiz Zelada	09918123
	Nombre y Apellidos	N° DNI

Jurado 3	Marcos Enrique Retamozo Hidalgo	10778102
	Nombre y Apellidos	N° DNI

DEDICATORIA

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ABSTRACT

The availability and access to city facilities are key metrics in the assessment of the quality of life of its inhabitants. In our case study, it became evident that there is a gap between the supply of facilities (education, health, supply, security, culture, recreation, and sports) and the context of urban planning, which must structure a comprehensive and long-term vision through urban plans. This management tool must integrate facilities with housing, transportation, facilities, workplaces, etc. Likewise, it must cover various scales (neighborhoods, districts, municipalities, metropolitan areas, regions) and a multi-stakeholder vision (government authorities, private entrepreneurs, academics, and civil society). The existing gap generates an inequitable territorial distribution of facilities and services, which leads to progressive social segregation in the city and a progressive decrease in the quality of life of its inhabitants. On the other hand, the concept of a city's reputation has two main connotations. On the one hand, it is based on the functional value that a city has for its inhabitants; on the other hand, it echoes the emotional ties between them and the city, according to social roots. This research addresses, from an empirical perspective, the supply of facilities within the city of Ventanilla and its influence on the city's reputation. The analysis was based on metrics of the spatial distribution of facilities and the perception of its inhabitants. The results show that the supply of facilities, within a decontextualized diagnosis of needs and without a long-term vision, through a Master Plan, causes a progressive deterioration of the quality of life. At the same time, quantitative metrics related to the provision of facilities can be a misleading approach to assessing the quality of life in a city. Our research made it clear that it is necessary to include metrics, methodologies, and qualitative analyses so that underlying issues such as accessibility, placemaking, and social cohesion are also assessed. Post -COVID-19 scenario concepts such as "the 15-minute city" and others may provide useful insights in this regard.

Keywords: Planning, Facility, Reputation, Quality Of Life, City

CAPÍTULO 1 INTRODUCTION

The Peruvian government within its different administrative organizations, from the National to the Regional and Local ones, is in charge of planning and managing the supply of Urban Facilities [1]. In 2016, by Law # 1252/2016, it was established that public investment must be managed through the National Framework for Long-Term Planning and Financing, also counting on a comprehensive assessment of needs according to the different territorial scales. Feasibility assessment is, of course, a key step in project decision-making and implementation. Given historical trends, there is a gap in most cities in the country in terms of the availability of facilities and services, and Ventanilla is not the exception but a sample of these poor standards.

Although some references and standards are included within the planning tools and normative considerations, facilities and services are assessed as "thematic silos", without considering the interrelationships between them [2]. For example, the allocation of schools in a given territory requires related services to meet correlated needs (e.g., libraries, and sports facilities). In cities such as Ventanilla, facilities and services are provided without a comprehensive planning approach and are not included in Urban Planning which is a key tool, especially, for a long-term vision [3]. Although there is some awareness of the need for a comprehensive planning approach, in 2018, out of 1,874 municipalities nationwide, 70% of them do not have a technical Urban Development Planning document [4]. The gap is critical, especially at the local level (municipality), and the consequences are cumulative in the long term [5].

According to Bonaiuto [6], globally, cities that develop comprehensive planning approaches build environments that provide a better quality of life for their inhabitants and, therefore, have

a higher reputation as livable places. Thus, it can be inferred that most Peruvian cities, such as our case study (Ventanilla), do not enjoy a good reputation among their inhabitants and visitors, as the data and analysis developed will demonstrate. The situation tends to be critical, because local residents suffer daily from the shortages and poor quality of services and facilities.

According to a recent survey [7], in Lima as a metropolitan territory, 49.7% of its inhabitants have a poor perception regarding the planning, design, management, and implementation of services and facilities within its boundaries. In the province of Callao, the perception is even worse, since 57.0% of its inhabitants consider that there is a lack of services and facilities. Our case study (Ventanilla), which is part of the province of Callao, has been divided into three zones that will be analyzed accordingly.

Our analysis is divided into four blocks. The first one focuses on the theoretical background, related to the spatial distribution of Urban Facilities and their influence on the reputation among local residents. The second block explains the methodological approach, which includes quantitative and qualitative tools and spatial analysis to track distribution patterns and assess urban reputation in each zone. The third and fourth blocks show the results of the research and provide key findings related to urban reputation as a performance indicator related to the availability of facilities and services. Finally, some strategies are proposed to reduce the gaps found that lead to a city having a lower score within the reputation concept.

CAPÍTULO 2 LITERATURE REVIEW

Urban facilities and services play a fundamental role in the city's right to an adequate standard of living. Public spaces, for example, enable collective life [8]. Lynch [9] states that Urban Facilities build citizenship and a collective sense of belonging to a place, so their equitable spatial distribution is a must within urban planning. Nieto and Márquez [10] state that an adequate assessment of needs is a basic starting point in the planning of facilities and services in a city. Theories of spatial distribution have been useful approaches to understanding the assessment of needs analysis and identifying the process of allocating facilities and services within the city.

Christaller, cited in Vega [11], states that "central places are primarily territories where a variety of facilities and services are built" in such a way that they draw people from surrounding neighborhoods (p. 22). Vicuña Del Río [12] explains that density is a key measure for planning the growth of a city since it is also correlated with centrality. Thus, the greater the number of facilities and services that are built in a place, the greater its centrality.

At the national level (Peru), the guiding document that establishes standards for the planning of Urban Facilities is the National System of Urban Planning Standards [1] which dates back to 2011 and operates under the Ministry of Housing, Construction and Sanitation. This reference document defines the allocation and supply of urban facilities based on population rates, but there are no additional considerations on the quality of facilities and services provided, travel time from home to facilities, externalities, secondary benefits, etc. It provides the standards for education, healthcare, leisure and sports, culture, retail, public services, security, and special uses. As a consequence of the wrong approach to the use of national planning references, there is a progressive imbalance in the availability of services [9,13].

Regarding Urban Reputation, Villafañe [14] states that a city that provides all the necessary services for work, study, business development, leisure, and daily life will be, in turn, better valued among its inhabitants. Bonaiuto [6] states that Urban Reputation is also correlated with the planning process as a whole. An inclusive process will provide more competitive cities so that urban reputation is not only a matter of quantitative standards but also of qualitative ones.

The Reputation Institute's 2018 City RepTrak [15] shows that a city that drives public policies to meet the needs of its inhabitants tends to score higher on the Key Performance Indicators of reputation. Globally, there are some cities such as Sydney, Boston, Dublin, Toronto, and Curitiba, which are at the top of the overall competitiveness rankings. These cities have in common a strategic urban planning process from scratch, so public policies and decision-making are oriented to local needs [16].

According to Hortulanus, cited in Bonaiuto [6], local residents and the temporary population are the ones who use the different facilities and services every day and are also able to evaluate the city's services and, in the end, the reputation of the city as a whole. According to Hernandez [17], a participatory approach of the local community within urban planning is a key consideration to achieve not only cities with higher reputation scores but, in the end, to achieve sustainable communities. Therefore, all stakeholders, including government institutions, private organizations, researchers, and local inhabitants, should be included in the planning process and decision-making.

CAPÍTULO 3 CASE STUDY

The criterion for selecting Ventanilla as a case study is based on the fact that the province of El Callao, where Ventanilla is located, has the lowest score in terms of the availability of facilities and services according to an assessment made by local inhabitants and regular visitors [7]. As mentioned, this assessment also considers the planning process and the metrics. Ventanilla is also one of the districts with the highest population growth rate with an annual average of 13.60% [18]. In terms of density, there are 4,294 inhabitants/km², which is the lowest in El Callao, due to its large territorial extension of 73.52 km² [19]. Ventanilla is thus a low-density city where most of its inhabitants move using motorized means to reach different facilities and services [20]. This, of course, undermines the overall quality of life, as the time and expenses related to commuting are quite high [21].

CAPÍTULO 4 METHODOLOGY

To assess how the spatial distribution of facilities and services influences the urban reputation index, an analysis has been developed based on two key performance indicators: one is the location and the other is the radius of influence of the services. The concept of the 15-minute walk city, coined by Carlos Moreno in 2015 [22], is based on the idea of providing all facilities and services to the population living in any area of the city. Thus, achieving pedestrian accessibility reduces motorized modes and all negative externalities (environmental pollution, traffic congestion and longer travel times, higher transportation expenditure, accident rates). Furthermore, according to Gehl's theory [23], the average walking speed of a person is 5Km/h, so a suitable radius for the provision of facilities and services would be within a 1.25 km extension from the dwellings, which would provide a compact and integrated city [24]. Our research also included the city reputation indicators (CRI) developed by Bonaiuto [6], which assess from a comprehensive approach how the local population considers that their needs are satisfied.

4.1 Analysis of Spatial Distribution: Urban Facilities and Services

First, the density of Urban Facilities was evaluated by taking into account two metrics:

a) Location of Urban Facilities. Figure 1 shows the spatial distribution of the urban facilities. The map distinguishes three zones in the district of Ventanilla: North, Center, and South [25].

b) Radius of influence. The territorial extension, in which, according to an average speed of movement (5 km/h) [23], a person walks in 15 minutes, was fixed. The units were converted and shown in minutes.

It was then shaded on the map considering the three zones mentioned above. The map allows identifying the center as the area with the best level of service in terms of Urban Facilities.

4.2 Urban Reputation Assessment. Adapted Approach

The City Reputation Index developed by Bonaiuto [6] was adapted, which obtains key data from a comprehensive survey that includes 180 items grouped into 12 topics, as shown in Table 1. Population growth trends provided by INEI [26] were considered, which establishes 369,618 inhabitants as the population of Ventanilla for 2021. The District Density represents 5,027.45 inhabitants/km². These data are also divided according to the three zones already mentioned. The North zone has 105,576.45 inhabitants, the Center has 70,535.12 inhabitants, and the South zone has 193,506.43 inhabitants. Finally, 97 surveys were available through random sampling: 28 correspond to the North zone, 18 to the Center, and 51 to the South zone. As for the North zone, 28 local inhabitants of this zone were asked to complete surveys to also assess the Central and South zones, where they do not live but work, study, or access retail and leisure services. The same logic was applied to inhabitants living in the Central and South zones. The surveys were conducted in February 2020.

The statistical analysis was performed with SPSS software (version 25.0) with a 95% confidence interval, validating its reliability. The analysis took into account two criteria: the first was that the inhabitants of the zone were asked to evaluate the facilities and services within the zone where they live; and, then, to assess the facilities and services in the other two zones where they do not live but perform some activities, such as working, studying, shopping, or leisure. The result was 0.46 Cronbach's Alpha, so 23 items were eliminated. As a consequence of the eliminated questions, Cronbach's Alpha was 0.77, which significantly improved its reliability.

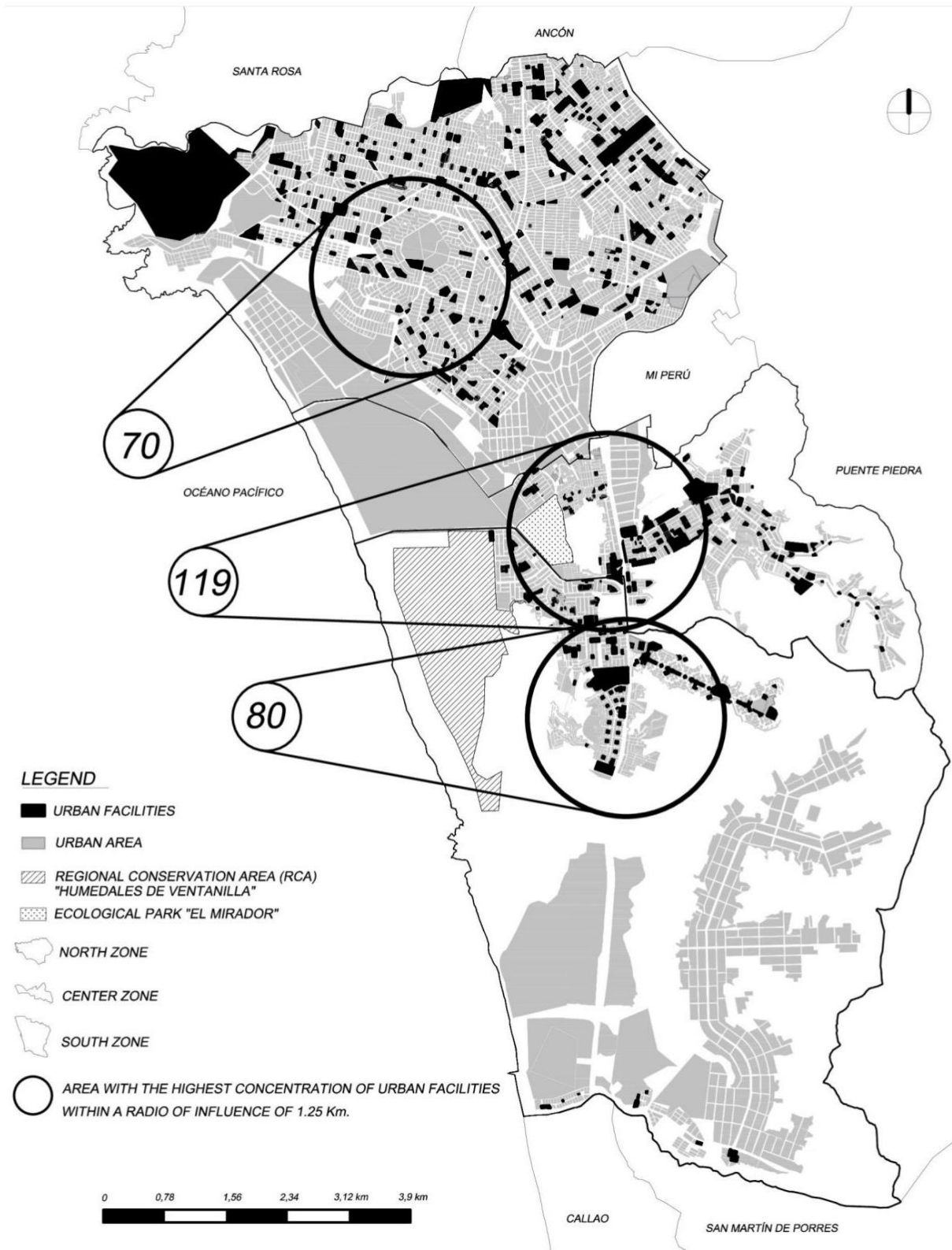


Figure 1. Spatial Distribution of Urban Facilities

Table 1. Questionnaire items

Topics (T)	Factors (F)	Items
T1 Quality of Life	F1 Livability	Items 1 to 9 and 11 were kept. Item 10 was eliminated
	F2 Calmness & Order	Items 12 to 15, 17, and 18 were kept. Item 16 was eliminated
	F3 Social Climate	Items 19, 20, 22, 23, 25, and 26 were kept. Items 21, 24, and 27 were eliminated
T2 Safety	F1 Neighborhood Safety	Items 28 to 32 were kept
	F2 Crime Safety	Items 33 to 36 were kept
	F3 Centre/Periphery Safety	Items 37 to 39 were kept
	F4 External Appearance	Items 40 to 42 and 44 were kept. Item 43 was eliminated
T3 Cost of Living		Items 45, 46, 48, 51, 52, and 54 were kept. Items 47, 49, 50, 53, and 55 were eliminated
T4 Weather		Items from 56 to 60 were kept
T5 Compatibility	F1 Culture & Leisure	Items from 61 to 65 and 67 to 69 were kept. Items 66, 70, 71, and 72 were eliminated
	F2 Work & Services	Items 73 to 78 were kept
	F3 Lifestyle	Items 79 and 82 were kept. Items 80 and 81 were eliminated
T6 Landscape Quality	F1 Historical/artistic Heritage	Items 83 to 87 were kept
	F2 Restorative power	Items 88 to 96 were kept
T7 Care	F1 City Care	Items 97, 99 to 101 were kept. Item 98 was eliminated
	F2 Centre/Periphery	Items 102 and 103 were kept
	F3 Pollution	Items 104 and 105 were kept
T8 Public Transportation	F1 Connections & Mobility	Items 106 to 108, 110, 112 to 115, and 117 to 120 were kept Item 111 was adapted to the Peruvian context, being written as: This city has an efficient transportation system

	F2 Traffic	Items from 121 to 129 were kept
T9 Gastronomy	F1 Culinary Tradition	Items 130 to 134 were kept. Item 135 was adapted to the Peruvian context, being written as: The food of this city is better than in other cities of Peru
	F2 Food Price	Items 136 and 137 were kept. Item 138 was eliminated
T10 Place Identity	F1 Place Distinction	Items 139 to 141 were kept
	F2 Identification with the City	Items 142 to 148 were kept
T11 Place Attachment		Items 149 to 152 were kept. Item 153 was eliminated
T12 Legibility	F1 Friendliness	Items 154 to 165 were kept
	F2 Welcome	Items 166 to 171 and 173 were kept. Item 172 was eliminated
	F3 Closure	Items 174 to 180 were kept

Note: Own elaboration based on the instrument elaborated by Bonaiuto [6]

Table 2. Supply of Urban Facilities

Urban Facilities	North Zone	Center Zone	South Zone
Education	16	31	17
Healthcare	2	6	4
Leisure & Sports	38	58	46
Culture		2	
Retail	9	9	5
Administrative		5	4
Security		1	
Special Uses	5	7	4
Total	70	119	80

The Urban Reputation variable comprises 12 topics (dimensions); each topic has one or more factors (indicators) and 157 items. The following classification was made:

(a) Internal Urban Reputation (IUR), which corresponds to surveys answered by local inhabitants living within the evaluated zone.

(b) External Urban Reputation (EUR), which corresponds to the surveys answered by local inhabitants who do not live within the limits of a specific zone, but use some facilities and services located in it.

To measure the IUR as a percentage, all the items of each factor were added together and their mean related to each topic was obtained. Local inhabitants whose dwelling is located within the boundaries of a specific zone are considered residents of that zone. To measure the EUR as a percentage, all the items of each factor were added together and their mean related to each topic was obtained. Local inhabitants whose dwelling is not within the boundaries of a specific zone are considered visitors to that zone. Finally, a mean was obtained by adding together the results related to each zone, considering both IUR and EUR.

CAPÍTULO 5 RESULTS AND DISCUSSION

The results show that, according to the 15-minute city principle and the speed at which a person travels on foot, the radius of influence that a person reaches in that period is 1.25 km. Within this radius, the urban facilities are distributed as shown in Table 2.

Based on the analysis, we were able to identify that the Center zone has a higher rate of supply of Urban Facilities than the North and South zones, although it has a smaller territorial extension. This allows that in a 15 -minute walk, both residents and visitors to the Center zone of Ventanilla have access to all the services provided to meet their needs. On the other hand, Table 3 shows the values obtained in the urban reputation of each zone. These results show that the Center zone has a better quality of life, better climate, greater compatibility, better quality and care of the landscape, better public transportation, better food, greater attachment to the place, and legibility.

Table 3. Urban Reputation (%)

Topics		Zones	IUR	EUR (a)	EUR (b)	EUR	UR
T1	Quality of Life	N	55.01	58.67	57.95	58.31	56.66
		C	59.35	54.34	58.25	56.29	57.82
		S	58.12	54.80	59.92	57.36	57.74
T2	Safety	N	60.23	56.96	58.37	57.67	58.95
		C	56.99	60.40	58.35	59.37	58.18
		S	56.92	58.58	54.56	56.57	56.74
T3	Cost of Living	N	58.64	67.04	67.41	67.23	62.93
		C	66.85	58.89	66.85	62.87	64.86
		S	64.87	59.40	67.53	63.46	64.16
T4	Weather	N	33.19	55.40	55.26	55.33	44.26
		C	52.89	33.56	56.44	45.00	48.94
		S	52.40	33.20	56.56	44.88	48.64
T5	Compatibility	N	32.66	51.27	44.01	47.64	40.15
		C	55.71	32.56	44.83	38.69	47.20
		S	45.58	31.71	59.88	45.79	45.68
T6	Landscape	N	36.73	42.85	36.86	39.85	38.29
		C	46.19	36.72	38.56	37.64	41.91

		S	38.52	36.89	50.33	43.61	41.06
T7	Care	N	64.69	71.23	70.37	70.80	67.74
		C	73.43	65.28	70.56	67.92	70.67
		S	71.33	65.43	72.50	68.96	70.14
T8	Public Transport	N	55.32	61.66	60.48	61.07	58.19
		C	63.74	55.52	60.01	57.76	60.75
		S	61.57	55.97	63.20	59.58	60.57
T9	Gastronomy	N	34.14	44.22	43.09	43.65	38.89
		C	44.26	32.50	43.43	37.96	41.11
		S	41.97	33.30	45.44	39.37	40.67
T10	Identity	N	60.32	59.22	63.46	61.34	60.83
		C	55.93	60.19	62.49	61.34	58.63
		S	63.69	61.43	54.92	58.17	60.93
T11	Place Attachment	N	42.96	49.72	43.70	46.71	44.83
		C	53.33	41.11	44.44	42.77	48.05
		S	45.20	43.10	56.70	49.90	47.55
T12	Legibility	N	55.19	55.04	54.43	54.73	54.96
		C	56.26	54.75	54.59	54.67	55.46
		S	54.64	54.82	56.21	55.51	55.07

Note: N= North, C= Center, S= South

Therefore, the hypothesis that the spatial distribution of Facilities and Services is highly correlated with the Urban Reputation score can be accepted. At the same time, when comparing the results of topic 11 (Place attachment), the Center of Ventanilla also scores higher than the other zones, so the sense of belonging to a particular territory is also a consequence of planning [8]. Of course, as the Center of Ventanilla is the zone with the highest reputation index in the district, a higher cost of living is also evident. Therefore, property values are higher than in any other area in the district.

CAPÍTULO 6 CONCLUSIONS

From the analysis and results obtained, our research hypothesis identifying the spatial distribution of urban facilities as a correlated variable regarding Urban Reputation is therefore accepted. One of the key objectives of this research is to connect scientific evidence with policy and decision-making, so that local governments, among other stakeholders, benefit from this analysis. Regarding Urban Reputation, priority should be given to improving the North Zone and implementing facilities that provide administrative and cultural services, as well as transportation-related infrastructure and leisure and sports facilities to offer more opportunities to both residents and visitors. A key issue in this zone (North) results from its lower density, which makes it more dispersed and fragmented.

The highlight of this research was to include both residents and visitors to rate the urban reputation within the zone where they live, and also concern the zones where they go to work, study, go shopping or enjoy leisure activities regularly. Thus, an opportunity emerges to analyze and evaluate the concept of Placemaking, and to consider it as a planning strategy not only during the management stage but especially for the implementation of solutions. A strategy that can be applied in the North zone. As this research shows, a comprehensive approach to planning the provision of facilities and services for a city implies both a functional value of these facilities and an emotional link between inhabitants and specific spaces within their neighborhoods. Thus, it is possible to move from the twelve disaggregated variables to this key concept (placemaking) and have a different sampling method to survey the space, shifting from conventional statistics collected by local governments at the district level to case studies and pilot testing projects that have embedded a placemaking process. Finally, the Center zone of Ventanilla provides a reference and a standard for urban planning, in general, and the

implementation of facilities and services, in particular. Historically, Urban Planning has benefited from comparative experiences and the best practices on a global scale.

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