Submitted: 09/01/2026 - Accepted: 10/02/2026 - Published: 29/03/2026

Location-Driven Growth: Using Geospatial Insights to Scale Convenience Retail in Ecuador

Mateo José Cordero Toledo [1], **Asli Cazorla Milla**[1*]

[1]*Universidad Internacional de Valencia*
[*]*acazorlam@professor.universidadviu.com*

DOI: 10.26417/nh8yht85

Abstract

This study examines how geospatial analytics can support convenience retail expansion decisions in Ecuador. Using a mixed-methods design, we combine secondary demographic and points-of-interest data with GIS-based suitability mapping and qualitative insights from industry stakeholders to identify high-potential retail zones and translate them into actionable site-screening criteria. Results indicate that demand density, accessibility, and competitive configuration jointly shape location attractiveness, while mobility and urban form introduce boundary effects that standard isochrone catchments may overlook. The paper contributes a replicable location-intelligence framework for data-constrained emerging markets and derives managerial implications for network rollout, format placement, and risk reduction in expansion planning. This article is based on the research conducted for the MBA program, defended in 2025, at the Universidad Internacional de Valencia (VIU). The present manuscript is an adapted version of that academic work, and all institutional affiliation and academic context are acknowledged accordingly.

Keywords: Convenience retail, location analysis, GIS, market entry strategy, expansion strategy, retail geography

1. Introduction

Convenience retail expansion has been closely related to the development of consumer shopping missions. While consumers regularly engage in periodic stock-up shopping at large format stores, there has been an increase in frequent top-up shopping that stresses the benefits of time efficiency, accessibility, and guaranteed

availability. Convenience retailers must navigate this change to greater network location strategy issues as location accessibility has become the primary criteria of choice of the stores whereas the number and geographical distribution of stores has become critical. (Berry et al., 2002; Clulow & Reimers, 2009) In new urban settings, infrastructure nuances, combined with the pervasiveness of technology, further exacerbate these challenges. Expansion decisions solidify into ones that are more integration-based, rather than simply strategic or technical ones. These are tied to market potential, market dynamics, mobility restrictions, readiness of utilities, land feasibility, or multimodal integration. "A desirable location, when considered from a demographic standpoint, can prove to be operationally unsuitable due to factors such as congestion, land parcel constraints, or absence of support infrastructure, while an operationally viable site may not perform well by being located within existing catchments or failing to match local socioeconomic patterns." (Porter, 2008)

A case study of Ecuador can help to illustrate these conflictions. Today, modern retail occurs in a small geographic area represented by a few provinces, while medium-size cities, such as Cuenca, have emerging development opportunities related to retail nodes. Under these circumstances, modern retail players have established integrated retail concepts, including commercial plazas, which offer retail anchors and services like food, banking, entertainment, and smaller-tenant mixes. Commercial plazas can offer a number of shopping missions and phased development opportunities related to smaller-tenant mixes and services.

This work corresponds to the transformation of the uploaded paper into an empirical article by reporting on a mixed-methods study on the focus company G-O Corp. (Coral Hipermercados) and the Cuenca case. The underlying research question underlying this work is: How can retailers use the analysis of the macro-market, competitiveness analysis, and geospatial data at the individual locations in order to decide on the location in emerging urban areas? This work does not focus on a purely theoretical contribution; it has an empirical and process-related character because it presents actions, data sources, and results in terms of catchments and geospatial opportunities.

2. Literature Review

Convenience retailing is defined by small baskets, high visit frequencies, and a functional offer anchored by convenience, speed, and assured access. In response to constrained living schedules, retail real estate is organized into more specialized patterns, reflecting different purchasing mission types: large formats as anchors for stock-up shopping, smaller formats for top-up and immediate need. Such distinctions have important implications for expansion, as happenings require carefully balanced retail portfolios that combine formats to address catchment size, visit volume, and processing complexities. In such realities, players deliver balanced retail portfolios, often using typological formats for growth stages (anchors, plazas, express/plaza-express, neighborhood retail). (Berry et al., 2002; Clulow & Reimers, 2009). Also, there are internal competition issues that are posed by the expansion of the portfolio.

As the network densifies, the new locations may compete with the existing locations by shared customers. Thus, the network strategy will have to take into consideration the overlap along with the coverage. Even when there are no transactions, the geographic variables may indicate potential overlap issues.

Retail location studies have shown stores' performance to be associated with accessibility, demand intensity, and competitive structures. In their formal versions, trade area models calculate the likelihood that customers from an origin region would patronize a particular store by incorporating friction factors with store attractiveness. While in environments where there's richer data available, the former can be represented with measures like observed foot traffic or sales; in more limited environments, the analyst commonly starts with approximations including factors such as the size and accessibility of the competitors or stores. The overall point remains the same: an analyst must define stores' performance relative to their competitors and the existing store network (Huff, 1964).

A method that is applicable in real-world projects and is used in the paper is the buffer-based catchment analysis. This method uses buffers, which are surrogates for walk and drive times, and can be combined with population and socio-economic data layers, giving "theoretical" catchments. Although buffers might exaggerate accessibility for areas hampered by the presence of constraints such as rivers and infeasible street patterns, they can be established as an easily understandable standard and can be progressively improved as more accurate mobility data become more widely available. Of prime importance in the buffers is the identification of the overlaps.

The expansion criteria usually involve more variables than just the level of demand. The readiness of the utilities, zoning restrictions, road hierarchy, and competitiveness are variables of common significance in the factors of MCDA. The weighted overlay approach was used in the MCDA paper in the following weighted variables: population, density, basic services, and competition in the Cuenca region. It must be noted here that MCDA does not act merely as a level of thoroughness evaluation of the expansion sites, rather MCDA is a screening process giving a justifiable shorter list of sites to expound further due diligence consideration (Malczewski, 1999, 2006). The reason why MCDA can be very useful for emerging market businesses is that it permits a company to span multiple kinds of datasets (census data, open mapping, in-house knowledge) and to formalize assumptions. The model clarity of weighting and thresholding helps to synchronize various in-house teams such as strategy, real estate, operations, and digital.

Omnichanneling increases convenience through reduced time costs of shopping and because it shifts tasks (such as searching for items or making payments) from offline to online. Click-and-collect is one example of this: consumers search and pay online and then pick up their goods in a store. It could therefore raise satisfaction levels, especially with fast and dependable collection. On the other hand, there is a spatial

aspect of omnichanneling. Pickup requires well-positioned bays, secure routes of circulation, storage areas, and working patterns (inventory and order activity). Thus, omnichannel preparedness should not simply be considered after site and format analyses (Vyt et al., 2022).

Recent studies suggest that the field of "geomarketing" and location intelligence has evolved from a GIS application into marketing discipline, especially within the field of retail network marketing. A bibliometric analysis on the topic of geomarketing within the field of retail suggests that the field has seen an increasing interest of literature that seeks to integrate the field of spatial analysis with the topics of segmentation, competitive strategy, and performance-based decision-making, while also indicating the methodological shift towards more sophisticated models of mobility and point of interest (POI) ecosystems (Tudor et al., 2025). Meanwhile, the post-pandemic retail environment has also seen the strategic importance of location-based analysis, especially within the field of omnichannel retail, wherein the store networks are not only designed to facilitate walk-in traffic but also to provide convenience for the purposes of fulfilling orders, pickups, and servicing (Beckers et al., 2021). This, therefore, supports the argument that the location decision is an integral part of the marketing strategy, rather than merely an operational or real estate-based decision, and that emerging market studies can contribute significantly towards the global debate on the topic.

One of the most important methodological innovations in the last five to seven years is the application of machine learning (ML) in the early-stage site screening process. Instead of applying the conventional gravitation logic, ML methods utilize a wide range of features, including demographic, land use, and accessibility variables, as well as POIs, to efficiently filter the store suitability and generate the shortlist of candidate locations (Lu et al., 2024). This approach can be especially useful in environments where high-frequency transacting data are not readily available or can be easily obtained, as the model can function with a combination of open and limited proprietary data. In the context of the current research, the ML approach can be seen as a suitable extension of the role of the GIS opportunity map in the decision-making process, as it shares similarities with the goal of the opportunity map in terms of the minimization of search costs and standardization of the evaluation process, although it also requires the involvement of managerial decision-making in the selection of the most suitable locations. Another relevant finding in the literature suggests that the effectiveness of the site screening process can be enhanced by considering the effect of competitor configurations and activity patterns, which can be incorporated into the model, and the importance of operationalizing the competitor density/accessibility variables as a joint effect on the attractiveness of the location (Lu et al., 2024; Sung, 2022).

Another significant theme is the growing reliance on mobile data for redefining catchments and trade areas. Research highlights that “true” catchments differ

significantly from traditional buffer-based or even network-based isochrone-based catchments because of real-world consumer movements, which are influenced by routines, trip chaining, and multi-purpose travel (Guan et al., 2025). Nevertheless, the application of mobile data presents both opportunities and challenges. The opportunities of mobile data are significant, such as inferring interactions between stores and origins, calibrating distance decay effects, and testing cannibalization and complementarity effects between nearby locations. The challenges of mobile data are equally significant, such as its volatility and potential biases, which raise validity issues when applied longitudinally or when comparing at a fine-grain level of neighborhoods (Ballantyne et al., 2022). The application of mobile data also raises important issues of governance and ethics, particularly when applied with socioeconomic data considered sensitive (Aversa et al., 2024). For emerging market research, these issues create a strong case for "data light but defensible" approaches such as transparent GIS-MCDA screening, with mobility-informed catchment modeling being an important validation route rather than an essential prerequisite.

Finally, recent research has helped to strengthen the link between retail geography, urban form, and sustainability, which is particularly useful for enriching the economic implications section of your paper. In particular, systematic reviews have suggested that retail distribution is an important influence on mobility, access equity, and environmental sustainability, and that retail networks should be understood as part of the urban system rather than as isolated firm attributes (Luo et al., 2025). Related research in urban planning and urban morphology has emphasized that retail spatial organization is closely tied to the physical structure of urban spaces, with site selection being related to street hierarchy, block structure, and functional centralities (Araldi et al., 2024; Efeoğlu et al., 2025). In addition, there is evidence of spatial spillovers, where the physical environment is an important influence on retail performance, which in turn suggests that site attractiveness is at least partially relational, depending on the surrounding physical environment (Sung, 2022). In total, this research supports a more marketing-oriented approach to understanding retail location strategies, where optimal expansion is not just about "where customers live," but also about "where urban structure concentrates movement, services, and complementary consumption," and how this interacts with competitor density in determining market penetration and viability (Araldi et al., 2024; Luo et al., 2025; Tudor et al., 2025).

Based on the paper statement and the literature streams introduced earlier, this research formulates three exploratory hypotheses. These hypotheses are tested using the results of geo-indicators and themes from interviews instead of using causal econometrics.

- H1: A convenience retail business will be positively influenced by proximity to a high-density residential area.

- H2: Sites that are easily accessible and have basic services are more feasible since investment costs are reduced.
- H3: Territorial economic capacity affects priorities for expansion in macro-locations.

The theoretical logic is operationalized in a multi-criteria GIS workflow. Central Place Theory informs macro

screening and the assignment of formats to nodes of different hierarchical capacity. Retail gravitation logic

informs the use of category-specific catchments and overlap diagnostics as approximations of attractiveness and distance decay. Spatial interaction and urban form perspectives motivate the inclusion of accessibility and

corridor structure through road hierarchy, density gradients, and competitive clustering. These theory anchored constructs are then translated into measurable layers such as population and density (demand), basic services (feasibility), and competition intensity (saturation) combined through a weighted overlay to produce a transparent opportunity score for site shortlisting.

3. Methods

The methodological design in the study is an embedded single case design. The target case is G-O Corp. (Coral Hipermercados) and its strategic expansion in Ecuador. The embedded unit within the case study is Cuenca because it represents a medium-sized city involving intense rivalry and is likely to play a role in the company's strategic expansion plan between 2025 and 2030. The methodological design in the study combines both quantitative and qualitative approaches targeted at understanding the embedded single case design chosen in the study. The quantitative method involves the use of GIS data analysis in creating evidence on the demand and rivalry in the retail markets of the company's target cities in Ecuador. The qualitative method involves conducting interviews in order to create evidence on the reasoning and limitations in understanding the mentioned spatial data on demand and rivalry in the retail markets.3.1. Data Sources

Three data streams were employed, as outlined in the paper. (i) Secondary data on Ecuador's retail presence includes distributions of store location data by provinces for leading retailers. (ii) Firm-level data includes sales reports and a planned expansion strategy for 2025-2030. (iii) The Cuenca GIS data analysis includes geocodes for stores sourced from free map databases, population data for census sectors sourced from Ecuador's 2022 Population and Housing Census (INEC), and base maps sourced from national geographic data (IGM). In situations where road network data was needed for procedural guidance, free map datasets (OpenStreetMap) were cited (INEC, 2022; IGM, n.p.).

3.2. Interview sample and protocol

The semi-structured interviews were carried out with five informants: two high-ranking retail executives, two persons in charge of development projects for commercial centers, and one high-ranking academic urbanist. The interview guide consisted of the following areas: (a) Location choice, (b) Competitive differentiation and tenant mix, (c) Changes of consumer behavior and convenience, (d) Digitalization and omnichannel options, (e) Sustainability and environmental friendliness, and finally, (f) Influence on mobility and development.

3.3. GIS workflow for Cuenca

The Cuenca workflow represents a transparent procedure suitable for replication in other cities (QGIS Development Team, 2024). "The Cuenca workflow represents a transparent procedure suitable for replication in other cities."

Step 1: "The 'commercial polygon' of Cuenca is delineated in a vector method in QGIS. It represents a polygon that approximates its functional market area."

Step 2: "A retail inventory. Stores are georeferenced and assembled as a point shapefile with both latitude and longitude coordinates."

Step 3: "Stores are categorized into three classes depending upon format and mission: Category 1 (Large format anchors/hypermarkets), Category 2 (Medium format stores), Category 3 (Small format and neighborhood stores). In this paper inventory, there would be 15 Category 1 stores, 8 Category 2 stores, and 33 Category 3 stores (altogether 56 stores in total)." (QGIS Development Team, 2024) In step 4, demand-layer preparation is conducted. In the paper, step 4 includes the development of choropleth maps for census sectors based on: (a) overall population, (b) density in terms of people per hectare (hab./ha), or (c) the proportion of housing provided basic services. In step 5, the development of influence areas occurs through the use of buffers. These buffers are equivalent to walk-in areas but of varying sizes according to the specific threat: Category 1 involves a 2,000 m buffer (roughly 30-minute walk), Category 2 involves a 1,000 m buffer (roughly 15-minute walk), or Category 3 involves a 500 m buffer (roughly 7-minute walk). In step 6, the estimate of the overall catchments develops by superimposing a 500 m buffer over the census sector to reveal the trapped population in a theoretical catchment size. Step 7: Maps competitive intensity. The paper defines the "retail competition area" layer by performing the inter-store distances analysis, generating a heat map identifying areas of high co-location and saturation. Step 8: Applies opportunity mapping with MCDA. The paper assigns weights to four criteria with quantified values—population, density, basic services, and competitive intensity to generate an overall opportunity score for each area. Step 9: Implements the feasibility filter. The proposed macro-locations need to comply with the threshold criteria (density, services, accessibility, and size) and cannot divide existing G-O Corp. areas of influence.

3.4. Validity, interpretation, and ethics

This approach relies on buffered catchments and models of mobility instead of calibrated models of mobility, one could conclude that this approach provides suggestive evidence instead of prediction. In addition, this approach allows for objective comparison and raises awareness of overlap issues. Triangulation with interviews enhances validity in terms of interpretation. Interviews adhere to ethical standards as discussed in this paper in terms of informed consent and privacy. (World Medical Association, 2013)

The empirical evidence is summarized in Tables 1–5. Tables 1–2 provide national and firm-level descriptive inputs used to motivate the macro-screening and portfolio logic, while Tables 3–5 document the Cuenca GIS operationalization (inventory, catchments/overlap, and MCDA opportunity scoring).

Table 1. Distribution of major retail chain stores by province (Ecuador)

Table 1 summarizes the province-level concentration of modern retail outlets used in this study's macro-screening logic. It illustrates the dominance of Guayas and Pichincha and motivates sequencing expansion from high-capacity provinces toward select intermediate markets (see Results, Section 4.1).

Province	Total	Percentage
Guayas	195	35,85%
Pichincha	124	22,79%
Manabí	51	9,38%
Los Ríos	25	4,60%
El Oro	22	4,04%
Azuay	19	3,49%
Esmeraldas	14	2,57%
Santa Elena	13	2,39%
Tungurahua	12	2,21%
Santo Domingo	12	2,21%

Source. Author's compilation from thesis dataset of leading retailers' outlet locations; see also sector reports and secondary sources cited in the thesis (e.g., Novedades de Supermercados…, 2019).

Table 2. G-O Corp. Expansion Plan (2025–2030) by format and city

Table 2 reports the firm's planned portfolio rollout by year and format. It operationalizes the study's portfolio view of expansion by showing the balance between (i) one large shopping center, (ii) staged annual development of commercial plazas, and (iii) express plazas as a smaller-footprint complement.

Year	Shopping Centers	Commercial Places	Express Places	Cities
2025	1			
2026	0	3		QUITO (2), MACHALA (1)
2027	0	3	1*	LOJA (1), RIOBAMBA (1) PORTOVIEJO (1) AZOGUES (1*)
2028	0	3		GUAYAQUIL (1), IBARRA (1), CUENCA (1)
2029	0	3	1*	IBARRA (1), LATACUNGA (1), QUITO (1), GUARANDA(1*)
2030	0	3	1*	GUAYAQUIL (1),QUITO(1), ESMERALDAS(1) CUENCA (1*)

Source. G-O Corp. internal planning documents reported in the master's thesis (G-O Corp., 2024).

Note. Totals for the paper include 1 shopping center, 15 commercial plazas, and 3 express plazas that are planned by 2030.

Table 3. Cuenca retail inventory and influence areas used in the GIS analysis

Table 3 documents the Cuenca retail inventory and the category-specific walking-distance buffers used to approximate influence areas for trade-area screening. The category typology links format size to shopping mission (anchor vs. medium vs. neighbourhood convenience) and is the basis for the catchment and overlap analyses in Table 4.

Store category	Count in Cuenca	GIS buffer radius
Category 1 (large-format)	15	2,000 m (≈30 min walk)

Category 2 (medium-format)	8	1,000 m (≈15 min walk)
Category 3 (small-format)	33	500 m (≈7 min walk)

Source. Author's GIS inventory and classification based on geocoded store locations and the thesis protocol; buffers implemented in QGIS (QGIS Development Team, 2024).

Table 4. Buffer-based catchment population estimates (Cuenca)

Table 4 reports theoretical catchment population estimates produced by overlaying store influence buffers with census-sector population. The comparison across categories highlights (i) the larger catchments of anchors and (ii) overlap-driven cannibalization risk in central corridors, which informs spacing and macro-location rules in the opportunity screening.

Retail group	Min catchment pop.	Max catchment pop.	Mean catchment pop.	Spatial pattern
Coral hypermarkets (chain)	30,565	104,526	80,882	High overlap noted; cannibalization risk in central corridors
La Favorita hypermarkets (chain)	14,126	106,245	64,890	Overlap observed; competitor coverage comparable to Coral
Category 2 stores (all chains)	6,091	35,001	24,486	Lower overlap; greater incremental coverage potential
Category 3 stores (all chains)	3,700	14,753	9,631	Strong overlap in central areas; overlap decreases toward outskirts

Source. Author's calculations from GIS buffer overlays using store geocodes and census-sector population (INEC, 2022).

Table 5. Criteria and weights for the Cuenca opportunity map (MCDA)

Table 5 specifies the multi-criteria decision analysis (MCDA) weighting scheme used to compute the Cuenca opportunity map. Population and density capture demand potential, basic services approximate feasibility/rollout readiness, and competitive intensity penalizes saturated corridors. The explicit weights make assumptions auditable and support sensitivity checks.

Criterion (opportunity map)	Weight
Population (census sector)	30%
Population density (hab./ha)	20%
Basic services coverage	20%
Competitive intensity (retail saturation)	30%

Source. Author's MCDA model implemented in GIS following established GIS–MCDA approaches (Malczewski, 1999, 2006), using census and service indicators (INEC, 2022).

4. Results

4.1 National retail geography and macro screening

The paper confirms the imbalanced geographical distribution of the modern retail industry in Ecuador. Table 1 above indicates a concentration of outlets in the provinces of Guayas with 35.85% and Pichincha with 22.79%, covering well over 58.6% of the outlets for the reported major companies. This geographical concentration corresponds entirely to the expansion strategy of beginning with the largest economic and demographic catchment areas and then targeting the secondary provinces and towns for selective expansion. Aside from the typological data on the number of stores, the paper also employs the territorial economic capacity as the macro-screening criterion. To be more specific, the paper identifies the gross value added (VAB) and the VAB per capita as indicators symbolizing the local financial power and combines them with the population data and population outlooks. Appendix documents in the paper provide data on VAB indicators in 2022 and the list of cantons likely surpassing the population data by 2030 (for instance, more than 100,000 people; and between 40,000 and 100,000). In terms of implementation, the macro-screening method tells which of the cities will enter its expansion pipeline and in what format. Larger metropolitan nodes will be able to support larger anchors and multi-tenant buildings, with intermediate cities targeted for office buildings and express stores. The G-O Corp. strategy described in Table 2 indicates that it will allocate plaza sites in both large and intermediate cities. Internal reports by G-O Corp.,

as quoted in the paper, indicate a steady growth in sales for Coral Hipermercados during 2019-2024 with an average growth rate of approximately 11.78%. Even though there was some disruption during the pandemic, the overall outlook provides a basis for a long-term expansion plan as stated in a realistic and achievable timeframe.

4.2 Firm performance and portfolio plan

Below is a summary of the portfolio planned for the period 2025-2030 (Table 2), which entails a new shopping center in 2025, fifteen commercial plazas spread evenly throughout the period from 2026 to 2030, and three express plazas in 2027, 2029, and 2030. The city list encompasses large markets such as Quito and Guayaquil, and intermediate markets such as Machala, Loja, Riobamba, Portoviejo, Azogues, Ibarra, Latacunga, Guaranda, Esmeraldas, and Cuenca. A clear vision to geographically diversify while using the plaza model to scale up appears.

4.3 Cuenca Retail Inventory, Demand Layers, and Services Readiness

The GIS inventory for the Cuenca region contains 56 retail locations (see table 3). The categorization produces 15 Category 1 anchors, 8 Category 2 medium-format facilities, and 33 Category 3 small-format/neighbourhood locations. The paper plots these locations against the census sector population and density, which shows marked variation over the urban polygon. The high-density areas represent the demand potential areas as well as the locations; the peripheral areas are of lower density but may represent future potential areas where competition may be less and improved mobility access may be available. The paper indicates the mapping of housing areas facilitated by basic services. The readiness of services in the central business district is less uncertain regarding rollouts and therefore more favourable for H2. The lack of readiness in peri-urban and rural-adjacent areas may raise capital expenditure and time-to-opening challenges, thus not favourable unless with high demand potential.

4.4 Influence areas, catchment sizes, and overlap pattern

The results of the influence-area analysis are facilitated by category-specific buffers, providing approximate catchments accessible on foot. This allows two kinds of analyses to take place: (a) catchment size, or size of demand, and (b) overlap, or saturation/cannibalization ratio. From Table 4, it appears that category 1 hypermarkets support the largest catchments, although overlap is high, especially along central routes where there are more anchors. The Coral group has estimated catchments between 30,565-104,526 persons with an average of 80,882, while for La Favorita, catchments are between 14,126-106,245 persons, averaging 64,890.

The implications for the paper are that these overlaps are perceived as the cannibalization risk; if the regions of influence heavily overlap, the incremental demand or the new demand captured by the new store could emanate from the

existing stores instead of new customers. This development becomes important for chain expansion strategy, as the focus shifts from 'maximizing coverage' to 'optimizing spacing'. Type 2 retailers have smaller catchments, but relatively lower levels of overlap (6,091 to 35,001; mean 24,486). This tends to reflect a higher level of incremental coverage, particularly along routes where Type 1 levels of coverage are low or where accessibility allows rapid trip times. Type 3 retailers have the smallest catchments (3,700 to 14,753; mean 9,631) and high levels of overlap in the central part of the study region, as would be expected, although fall away towards the periphery. Both sets of findings support H1.

4.5 Competitive Intensity and Multi-criteria Opportunity Mapping

For the transition from descriptive mapping to action-oriented screening, the paper proposes the creation of the competitive intensity map and the opportunity score map. Competitive intensity, which results from inter-store distance processing, can be visualized using the heat map, described by the "retail competition areas." High-intensity areas occur within the central corridors, which have high co-location opportunities and high land prices. The opportunity map results from a weighted overlay using four criteria (see Table 5): population (30 percent), density (20 percent), basic services availability (20 percent) for the measure of feasibility, and competitiveness (30 percent) measuring risk. The first two criteria represent demand, the next criterion represents the measure of feasibility, and the last criterion represents the measure of risk. For the research, the following feasibility criteria are used: density not less than 40 hab./ha, basic services in the highest quintile (80-100%), the score for opportunities greater than 28%, the presence of an arterial collector route within 400 m, and the land plot size is not less than 5,000 m^2. Lastly, the proposed sites for the new location must not conflict with the areas already influenced by G-O Corp. With these rules applied, as well as careful analysis of the opportunity map, the paper identifies two macro-locations for G-O Corp. new nodes: Plaza Challuabamba and Plaza Machángara, which are then shortlisted as sites for more thorough due diligence.

4.6 Themes in Interviews and Triangulation with GIS Data

The findings of the interviews are consistent with the GIS results and help to account for the importance of certain factors. The themes are presented below using the same categories as the paper analysis.

Location criteria and feasibility constraints

Accessibility/connectivity was cited as critical by our informants. Road hierarchy, access/egress safety, and the viability of parking/loading areas were cited as issues that can trump demographic appeal. This corresponds with the geographical clustering of outlets along highly accessible corridors in Cuenca in establishing H2: even where demand outweighs supply, poor access or services will boost investment and undermine uptime.

Competition & differentiation (services, experience, tenant mix)

The plazas are described as instruments of competition: a mixture of an anchor with services and entertainment was presented as increasing dwell time and cross-shopping. Differentiation was presented not merely as a communication of a brand but rather a choice of space and programs of differentiation (tenant mix, community interface, convenience services). This approach corresponds to the paper' definition of plazas as a scalable format of the intermediate city.

Consumer Behavior Change and Convenience Expectations

They described changes in consumers as a shift towards convenience and proximity, with increased expectations for speed and availability. This fits with a strong concentration of Category 3 stores in high-density core areas and with walking buffers as a significant frame for a top-up mission. In other words, interviewees felt that micro-location (the last 200-400 meters of a trip) can make a location appear convenient despite an attractive macro-location.

Digitalization and Omni-Channel Readiness

The informants also pointed out the expectations that have been created by technology, namely digital payments, loyalty programs, as well as integration. Significantly, they viewed the omnichannel notion both operationally and geographically—pickup convenience relies on the design of circulation. The implication here is that future opportunity maps may include a measure of the availability of the curb and pickup bay, especially if click-and-collect expands as a growth instrument.

Sustainability and Urban Effects

Respondents have recognized an increasing pressure to integrate sustainability aspects and to mitigate the effects of mobility. These risks have been identified in congestion and traffic generation. This underlines the importance of the proposed retail node design incorporating mobility integration and public space quality with regard to the value proposition, and not merely the compliance aspect.

With all these considerations in mind, and following a thorough analysis, two macro-locations are recommended for G-O Corp.'s new commercial plazas in Cuenca. These are referred to as Plaza Challuabamba and Plaza Machángara.

5. Discussion

The findings offer support for an integrated approach to expansion strategy. At the country level, the retail concentration ratio and the logic of the paper's macro-screening approach both point to the sequencing of expansion markets on the basis of economic capacity and demographic magnitude (H3). At the city level, the Cuenca example indicates that basic and open approaches to geospatial analysis can discern significant strategic points that correspond to: (i) the capacity of large-format outlets

to dominate wide catchments but create substantial overlap and cannibalization risks; and (ii) the greater incremental reach offered by outlets with medium formats in less-dense corridors. (Porter, 2008; Malczewski, 2006).

The weighted opportunity map shows how the strategic intent can be leveraged to build screening rules for the retailers. The strategy involves applying the demand along with the concept of feasibility (services readiness) and the competitive penalty to minimize the chances of identifying a location which looks attractive on paper but doesn't work on the ground. The use of explicit thresholds for density, quintile of services, road access, and the size of the parcels is particularly beneficial.

Evidence from interviews provides two significant additions. First, omnichannel competency must now also be incorporated in site assessment. The rise of click-and-collect use is increasing the relevance of pickup facilities as a site characteristic. Second, urban externalities are of strategic significance. Shopping hubs influence travel patterns and may result in congestion. They also influence local retail. Mobility and public space evidence must now also be incorporated in early model-building. Although there are no quantitative measurements incorporated in this study, their relevance is proven in decision-making and need to be integrated in future models.Members of the city can also be treated with the same transparency in order to enable decisions for the management of the business. By presenting traffic assumptions, access designs, and mitigations, the negotiations can concentrate on the mobility and public space improvements. The government can insist on safe crossing, public transport integration, and pedestrian interface improvements as part of the approval of the plazas. Due to the displacement of commerce, measures for mixed tenancy and vendors within the plazas can mitigate the negative distributional impact. In this empirical paper, the paper is translated into a mixed-methodology approach that embraces national retail data, firm strategies, city-scale analysis via GIS technology, and expert interviews. In particular, the case of Cuenca illustrates a procedure that can be reproduced in several areas and focused on drawing up retail competition maps and calculating bufferZone-defined catchments from census data. In turn, the resulting opportunity map would favor the preliminary appraisal of macro-locations. Even quanti-qualitative results underscore catchment size and overlap as well as illustrate feasibility issues and the increasing significance of omnichannel preparedness.

6. Limitations & Future Research Directions

There are three primary limitations to the current study. Firstly, the catchments are theoretical and rely on buffer analyses rather than sales or mobility transactional data; future studies could seek to verify catchments against sales or footfall or anonymized mobile location data. Secondly, the research considers one case study only; the same process could be used for comparison between Ecuadorian cities. Thirdly, the current opportunity model includes external costs implicitly but could

not estimate them; future studies could seek to nest transport models with equity measures.

References

[1] Araldi, A., Wayens, B., & Fusco, G. (2024). Retail spatial organisation and the physical city: Bridging retail geography and urban morphology. *Belgeo, (3).* https://doi.org/10.4000/11nj0

[2] Aversa, J., Azmy, A., & Hernandez, T. (2024). Untapping the potential of mobile location data: The opportunities and challenges for retail analytics. *Journal of Retailing and Consumer Services, 81*, 103993. https://doi.org/10.1016/j.jretconser.2024.103993

[3] Ballantyne, P., Singleton, A., & Dolega, L. (2022). Using unstable data from mobile phone applications to examine recent trajectories of retail centre recovery. *Urban Informatics, 1*, 21. https://doi.org/10.1007/s44212-022-00022-0

[4] Beckers, J., Weekx, S., Beutels, P., & Verhetsel, A. (2021). COVID-19 and retail: The catalyst for e-commerce in Belgium? *Journal of Retailing and Consumer Services, 62*, 102645. https://doi.org/10.1016/j.jretconser.2021.102645

[5] Berry, L. L., Seiders, K., & Grewal, D. (2002). Understanding service convenience. *Journal of Marketing, 66*(3), 1–17. https://doi.org/10.1509/jmkg.66.3.1.18505

[6] Berry, L. L., Seiders, K., & Grewal, D. (2002). Understanding service convenience. *Journal of Marketing, 66*(3), 1–17. https://doi.org/10.1509/jmkg.66.3.1.18505

[7] Clulow, V., & Reimers, V. (2009). How do consumers define retail centre convenience? *Australasian Marketing Journal, 17*(3), 125–132. https://doi.org/10.1016/j.ausmj.2009.05.015

[8] Efeoğlu, H. E., Joutsiniemi, A., & Mozuriunaite, S. (2025). Retail landscape and urban form: A systematic review of the literature. *Journal of Planning Literature*, Advance online publication, 1–16. https://doi.org/10.1177/08854122251400214

[9] G-O Corp. (2024). *Informe general* [Internal report].

[10] Guan, Y., Cheung, K. S., & Yiu, C. Y. (2025). Redefining retail catchment with mobile geolocation data: Insights from New Zealand. *Journal of Retailing and Consumer Services, 82*, 104089. https://doi.org/10.1016/j.jretconser.2024.104089

[11] Huff, D. L. (1964). Defining and estimating a trade area. *Journal of Marketing, 28*(3), 34–38.

[12] Inman, J. J., Winer, R. S., & Ferraro, R. (2009). The interplay among category characteristics, customer characteristics, and customer activities on in-store decision making. *Journal of Marketing, 73*(5), 19–29. https://doi.org/10.1509/jmkg.73.5.19

[13] Instituto Geográfico Militar (IGM). (n.d.). *Cartografía base del Ecuador* [Base cartography datasets].

[14] Instituto Nacional de Estadística y Censos (INEC). (2022). *Censo de población y vivienda 2022* [Dataset].

[15] Lu, J., Zheng, X., Nervino, E., Li, Y., Xu, Z., & Xu, Y. (2024). Retail store location screening: A machine learning-based approach. *Journal of Retailing and Consumer Services, 77*, 103620. https://doi.org/10.1016/j.jretconser.2023.103620

[16] Luo, X., Che Rose, R. A., & Awang, A. (2025). The evolution of retail outlet distribution: A systematic review of spatial patterns and their implications for sustainable cities. *Frontiers in Sustainable Cities, 7*, 1628137. https://doi.org/10.3389/frsc.2025.1628137

[17] Malczewski, J. (1999). *GIS and multicriteria decision analysis*. Wiley.

[18] Malczewski, J. (2006). GIS-based multicriteria decision analysis: A survey of the literature. *International Journal of Geographical Information Science, 20*(7), 703–726. https://doi.org/10.1080/13658810600661508

[19] Novedades de Supermercados, Retail, Franquicias y Centros Comerciales en Ecuador. (2019). *Informes sectoriales del retail ecuatoriano* [Industry reports].

[20] OpenStreetMap contributors. (n.d.). *OpenStreetMap* [Map]. Retrieved January 1, 2026, from https://www.openstreetmap.org

[21] Porter, M. E. (2008). The five competitive forces that shape strategy. *Harvard Business Review, 86*(1), 78–93.

[22] QGIS Development Team. (2024). *QGIS geographic information system* [Software]. Open Source Geospatial Foundation.

[23] Sung, H. (2022). Estimating the spatial impact of neighboring physical environments on retail sales. *Cities, 123*, 103579. https://doi.org/10.1016/j.cities.2022.103579

[24] Tudor, C., Girlovan, A., & Botoroga, C.-A. (2025). Where business meets location intelligence: A bibliometric analysis of geomarketing research in retail. *ISPRS International Journal of Geo-Information, 14*(8), 282. https://doi.org/10.3390/ijgi14080282

[25] Vyt, D., Jara, M., Mevel, O., Morvan, T., & Morvan, N. (2022). The impact of convenience in a click-and-collect retail setting: A consumer-based approach. *International Journal of Production Economics, 248*, 108491. https://doi.org/10.1016/j.ijpe.2022.108491

[26] World Medical Association. (2013). World Medical Association Declaration of Helsinki: Ethical principles for medical research involving human subjects. *JAMA, 310*(20), 2191–2194. https://doi.org/10.1001/jama.2013.281053