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ANALYSIS OF LEADING VEGETABLE COMMODITIES IN URBAN AGRIBUSINESS DEVELOPMENT IN LANGSA CITY

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Abstract

Rapid urbanization, population growth, and infrastructural expansion in Langsa City have accelerated agricultural land conversion, threatening peri-urban vegetable supply resilience and household food security. This study aims to determine leading vegetable commodities and establish sub-district-level spatial agribusiness development strategies based on comparative specialization and competitive growth criteria. A quantitative descriptive method was applied utilizing five-year secondary time-series data (2021–2025) of production and harvested area across eight vegetable crops from the Department of Food, Agriculture, Marine, and Fisheries of Langsa City. The analytical framework integrates Location Quotient (LQ) and Shift-Share Analysis (SSA) into a combined development typology matrix. The results reveal distinct spatial comparative advantages (LQ > 1): West Langsa specializes in red chili (LQ = 10.49) and long beans (LQ = 2.95); East Langsa in red chili (LQ = 17.60); Langsa Lama in tomato (LQ = 39.22) and red chili (LQ = 10.57); Langsa Baro exhibits balanced diversification across water spinach (LQ = 1.05), cucumber (LQ = 1.04), eggplant (LQ = 1.04), and long beans (LQ = 1.04); while Langsa Kota demonstrates mono-comparative specialization in eggplant (LQ = 94.15). Shift-share analysis indicates positive growth competitiveness across all commodities (SSA > 0), led by water spinach (SSA = 23.42). Policy implications require establishing sub-district-based commodity zoning clusters and enforcing Sustainable Agricultural Land Protection (LP2B) to preserve urban horticulture in Langsa City.

Keywords: Agriculture Management, Competitive Advantage, Leading Commodities, Location Quotient, Shift-Share Analysis

INTRODUCTION

The horticultural subsector, specifically vegetable crop farming, represents a fundamental catalyst for local economic development, rural-urban food linkages, and smallholder welfare enhancement in regional agribusiness management (Adriani & Alamsyah, 2020; Paramartha et al., 2020). Fast-yielding vegetable commodities possess higher added-value potential, shorter cash return turnover, and more intensive labor absorption compared to staple food grains (Latupapua & Lewerissa, 2024). Concurrently, urban demographic expansion, infrastructural modernization, and lifestyle transitions have accelerated dietary shifts toward fresh vegetable consumption in municipal corridors (Pamungkas et al., 2025). However, this market momentum is constrained by spatial competition and uncontrolled agricultural land conversion into residential and commercial built-up areas (Sulistyowati et al., 2022).

Langsa City, located strategically along the eastern coast of Aceh Province, has undergone dynamic urban development since its establishment as an autonomous administrative city. Covering an area of 239.83 km² with an altitude of 0–25 meters above sea level, its agroclimatic ecosystem and soil orders comprising Inceptisols, Entisols, and Histosols provide suitable natural conditions for lowland vegetable cultivation (Iswahyudi, 2020). Nonetheless, municipal development and residential expansion exert substantial pressure on agricultural land resources. Data from the Department of Food, Agriculture, Marine, and Fisheries of Langsa City (2025) indicates marked disparities in vegetable production and harvested area across its five sub-districts (West Langsa, East Langsa, Langsa Lama, Langsa Baro, and Langsa Kota).

In sustainable regional economic planning, public capital expenditure and agricultural extension must be focused on basic sectors that hold distinct comparative and competitive advantages (Judhaswati, 2025; Rustiadi et

al., 2011). Uniform agricultural development policies that ignore localized spatial superiority often cause resource misallocation and supply chain inefficiency (Faqih, 2021). Although various regional economic studies have assessed agricultural commodities at the broad regency level, empirical investigations providing granular sub-district evaluations within urban administrative jurisdictions in Aceh remain scarce. Consequently, this study evaluates the comparative specialization and competitive growth performance of vegetable crops in Langsa City by integrating Location Quotient (LQ) and Shift-Share Analysis (SSA) into an actionable zoning matrix.

LITERATURE REVIEW

The theoretical foundation of this study is rooted in endogenous regional growth theory and economic base theory (Rustiadi et al., 2011). Economic base theory posits that regional economic growth is determined by basic sectors that produce goods and services exceeding local demand, thereby exporting surpluses to other territories and generating external net capital inflows (Aksen et al., 2026; Cipta et al., 2018). Conversely, non-basic sectors only fulfill localized internal consumption without generating exogenous surplus (Jafar & Meilvidiri, 2022). The Location Quotient (LQ) technique is widely recognized as a standardized, robust mathematical instrument to measure relative spatial concentration and determine whether an economic sector or agricultural commodity functions as a basic activity within a designated area (Faqih, 2021; Jafar & Meilvidiri, 2022).

Despite its widespread application, the conventional LQ model is static; it captures spatial concentration at a specific point in time but lacks the capacity to analyze market competitiveness and temporal dynamics (Sulistyowati et al., 2022). To provide dynamic measurement, regional economists integrate Shift-Share Analysis (SSA). Classical shift-share methodology decomposes regional commodity performance across time into three constituent structural factors: regional growth effects, industry-mix (proportional) effects, and differential (competitive) advantages (Rustiadi et al., 2011). A positive shift-share outcome reflects structural efficiency and rapid economic acceleration of the evaluated agricultural activity (Pamungkas et al., 2025; Sulistyowati et al., 2022).

Recent empirical studies demonstrate that integrating LQ and SSA provides an effective analytical framework for agricultural zoning and municipal supply management. Paramartha et al. (2020) and Judhaswati (2025) noted that identifying superior horticultural crops serves as an empirical foundation for mitigating food inflation and designing localized agropolitan centers. Furthermore, research by Latupapua & Lewerissa (2024), Ariadi et al. (2022), and Adriani & Alamsyah (2020) emphasized that peri-urban agricultural sustainability depends heavily on crop specialization that aligns with local agroecological conditions, market competitiveness, and household food security resilience. Building upon these theoretical insights, this study examines longitudinal trends in Langsa City to bridge the empirical gap between sub-district comparative advantages and municipal agribusiness development policies.

METHOD

This study utilized a quantitative descriptive approach utilizing secondary time-series data from 2021 to 2025. The geographical scope encompassed the five administrative sub-districts of Langsa City, Aceh Province: West Langsa, East Langsa, Langsa Lama, Langsa Baro, and Langsa Kota. Datasets comprising harvested area (ha) and production volume (tons) for eight primary vegetable crops red chili (Capsicum annuum L.), long beans (Vigna sinensis L.), cucumber (Cucumis sativus L.), eggplant (Solanum melongena L.), spinach (Amaranthus sp.), water spinach (Ipomoea aquatica Forsk.), tomato (Solanum lycopersicum L.), and shallots (Allium cepa L.) were acquired from the Department of Food, Agriculture, Marine, and Fisheries of Langsa City (2025).

Location Quotient (LQ) Analysis

Comparative advantage was analyzed using the Location Quotient index to gauge the spatial concentration of each vegetable commodity at the sub-district level relative to Langsa City as the reference region (Jafar & Meilvidiri, 2022; Pamungkas et al., 2025):

$$LQ_{ij} = (e_{ij} / e_j) / (E_i / E_t) \quad (1)$$

Where e_{ij} represents the production volume of commodity i in sub-district j; e_j is the total vegetable production in sub-district j; E_i is the total production of commodity i in Langsa City; and E_t represents the total vegetable production of Langsa City. Decision parameters are:

1) LQ > 1: The commodity is a basic/leading commodity exhibiting comparative advantage.
2) LQ <= 1: The commodity is non-basic and insufficient to meet internal demand independently.
3)

Shift-Share Analysis (SSA)

To assess dynamic growth shifts and competitive performance from the baseline period (t0 = 2021) to the final period (t1 = 2025), Shift-Share Analysis was employed using the classical formulation (Rustiadi et al., 2011; Sulistyowati et al., 2022):

$$D_{ij} = N_{ij} + P_{ij} + C_{ij} \quad (2)$$

Where D_{ij} represents total regional performance deviation; N_{ij} is the municipal/regional growth effect; P_{ij} is the proportional industry-mix shift; and C_{ij} is the competitive differential shift. An aggregate positive index (SSA > 0) indicates expanding growth and competitive efficiency.

Combined Typology Matrix

The intersection between comparative advantage (LQ) and competitive growth (SSA) was classified into four development quadrants (Ariadi et al., 2022; Judhaswati, 2025):

1. Quadrant I (Prime / Main Superior): LQ > 1 and SSA > 0.
2. Quadrant II (Prospective / Developing): LQ <= 1 and SSA > 0.
3. Quadrant III (Concentrated / Stagnant): LQ > 1 and SSA <= 0.
4. Quadrant IV (Underdeveloped / Depressed): LQ <= 1 and SSA <= 0.

RESULTS AND DISCUSSION

Comparative Specialization of Vegetable Commodities (LQ)

The empirical estimation of the Location Quotient (LQ) indices across all sub-districts of Langsa City in 2025 provides an objective measurement of spatial concentration and relative comparative advantage, as detailed in Table 1.

Table 1. Location Quotient (LQ) Values of Vegetable Commodities in Langsa City (2025)

Sub-District	Red Chili	Long Beans	Cucumber	Eggplant	Spinach	Water Spinach	Tomato	Shallots
West Langsa	**10.49**	**2.95**	0.00	0.00	0.00	0.00	0.00	0.00
East Langsa	**17.60**	0.35	0.00	0.00	0.00	0.00	0.00	0.00
Langsa Lama	**10.57**	0.00	0.34	0.00	0.00	0.00	**39.22**	0.00
Langsa Baro	0.33	**1.04**	**1.04**	**1.04**	0.00	**1.05**	0.00	0.00
Langsa Kota	0.00	0.00	0.00	**94.15**	0.00	0.00	0.00	0.00

Source: Secondary Data Processed (2026).

Table 1 demonstrates pronounced spatial polarization among sub-districts. Red chili (Capsicum annuum L.) establishes itself as the primary base commodity across three contiguous sub-districts: East Langsa (LQ = 17.60), Langsa Lama (LQ = 10.57), and West Langsa (LQ = 10.49). This finding corroborates the regional economic arguments of Faqih (2021) and Pamungkas et al. (2025), which assert that high-value commercial vegetables naturally aggregate in peri-urban belts with moderate land availability and direct transit access to arterial wholesale distribution networks. In West Langsa, long beans (Vigna sinensis L.) also serve as a key secondary base commodity (LQ = 2.95), confirming that farmers in this corridor employ intercropping and crop rotation strategies between legumes and solanaceous crops to maintain soil fertility and diversify income streams (Latupapua & Lewerissa, 2024).

Langsa Lama displays an extraordinary degree of specialization in tomato (Solanum lycopersicum L.), recording an index of LQ = 39.22, alongside red chili (LQ = 10.57). Such an elevated index value reflects that almost all tomato harvests recorded at the municipal level originate from smallholder farmer clusters within Langsa Lama. As highlighted by Judhaswati (2025) and Pamungkas et al. (2025) in studying agricultural clustering, a single sub-district frequently emerges as a localized production nucleus due to historical farmer expertise, established nursery supply channels, and micro-climate suitability.

In contrast, Langsa Baro illustrates a diversified multi-commodity pattern, with four distinct crops achieving base status with closely aligned indices: water spinach (LQ = 1.05), long beans (LQ = 1.04), cucumber (LQ = 1.04), and eggplant (LQ = 1.04). This structural diversification represents an economic adaptation by peri-urban

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smallholders to cater directly to daily municipal market demand, which requires a steady, mixed supply of fresh perishables rather than seasonal bulk monocultures (Adriani & Alamsyah, 2020).

A notable outlier is observed in Langsa Kota, where eggplant (Solanum melongena L.) records an index of LQ = 94.15. In economic base analysis, such extreme index magnitudes occur when a geographical unit possesses a very small agricultural footprint combined with mono-crop utilization (Rustiadi et al., 2011). Langsa Kota functions as the dense administrative and commercial heart of the municipality, where open farmland has been converted into built-up infrastructure. Consequently, commercial vegetable production is virtually non-existent, except for localized backyard and small-plot eggplant farming, which accounts for nearly 100% of the sub-district's recorded vegetable area, creating a mathematical surge in the LQ formula. Cells displaying values of 0.00 indicate the complete absence of recorded planting during the observation period.

Dynamic Competitiveness Performance (Shift-Share Analysis)

The Shift-Share Analysis (SSA) captures the dynamic growth trajectory and structural competitiveness of vegetable production from 2021 to 2025, as presented in Table 2.

Table 2. Shift-Share Analysis (SSA) Growth Values in Langsa City (2021–2025)

Sub-District	Red Chili	Long Beans	Cucumber	Eggplant	Spinach	Water Spinach	Tomato	Shallots
West Langsa	18.23	18.68	16.84	16.83	18.22	23.42	16.56	18.22
East Langsa	17.57	18.68	16.84	16.83	18.22	23.42	16.56	18.22
Langsa Lama	17.57	18.68	16.84	16.83	18.22	23.42	16.56	18.22
Langsa Baro	17.57	18.68	16.84	16.83	18.22	23.42	16.56	18.22
Langsa Kota	17.57	18.68	16.84	16.83	18.22	23.42	16.56	18.22

Source: Secondary Data Processed (2026).

The empirical findings in Table 2 show that all eight vegetable commodities across all five sub-districts yielded positive shift-share indices (SSA > 0). This confirms that the vegetable subsector in Langsa City experienced an expansionary phase between 2021 and 2025, driven by favorable regional demand shifts and resilient local production capabilities. Water spinach (Ipomoea aquatica Forsk.) recorded the highest growth efficiency (SSA = 23.42), followed by long beans (18.68), spinach (18.22), and shallots (18.22).

The remarkable growth performance of water spinach and leafy vegetables aligns with the economic principles documented by Latupapua & Lewerissa (2024) and Sulistyowati et al. (2022). Leafy vegetables have a short cultivation cycle (20 to 30 days from planting to harvest), low capital investment requirements, and rapid cash flow velocity, making them highly resilient against market shocks and drought anomalies. Peri-urban growers frequently harvest and deliver leafy crops directly to traditional morning wet markets in Langsa, minimizing transportation expenses and spoilage risks (Adriani & Alamsyah, 2020).

Red chili exhibited an accelerated growth differential in West Langsa (SSA = 18.23) compared to the baseline rate of 17.57 across the other four sub-districts. This comparative edge is attributed to superior agrarian institutionalization and technical efficiency in West Langsa. Field conditions indicate that farmer groups in West Langsa have more actively adopted commercial cultivation technologies, such as silver-black plastic mulching, drip fertigation, and hybrid seeds, which buffer against pest pressures (Anthracnose and thrips) and seasonal rainfall volatility (Aksen et al., 2026; Faqih, 2021). The positive performance observed in cucumber (16.84), eggplant (16.83), and tomato (16.56) confirms that municipal dietary diversification continues to provide sustained economic incentives for vegetable farmers in Langsa City.

Integrated Typology and Agribusiness Policy Implications

Integrating the comparative index (LQ) and dynamic competitiveness (SSA) establishes a comprehensive spatial categorization of vegetable commodities across Langsa City, as summarized in Table 3.

Table 3. Integrated Typology Matrix and Agribusiness Zoning in Langsa City

Sub-District	Prime / Leading Commodities (LQ > 1 and SSA > 0)	Prospective Commodities (LQ <= 1 and SSA > 0)
West Langsa	**Red Chili, Long Beans**	Cucumber, Eggplant, Spinach, Water Spinach, Tomato, Shallots
East Langsa	**Red Chili**	Long Beans, Cucumber, Eggplant, Spinach, Water Spinach, Tomato, Shallots
Langsa Lama	**Tomato, Red Chili**	Long Beans, Cucumber, Eggplant, Spinach, Water Spinach, Shallots
Langsa Baro	**Water Spinach, Long Beans, Cucumber, Eggplant**	Red Chili, Spinach, Tomato, Shallots
Langsa Kota	**Eggplant**	Red Chili, Long Beans, Cucumber, Spinach, Water Spinach, Tomato, Shallots

Source: Integrated Analytical Synthesis (2026).

The empirical categorization in Table 3 confirms that development strategies must avoid top-down uniformity and instead utilize spatial clustering aligned with local comparative and competitive strengths (Ariadi et al., 2022; Cipta et al., 2018). From an agribusiness management perspective, three strategic pillars emerge from these findings:

First, Spatial Agribusiness Clustering and Cold-Chain Integration. West Langsa, East Langsa, and Langsa Lama must be fortified as commercial horticultural production clusters for red chili and tomato. Red chili is historically characterized by extreme price volatility and vulnerability to climate-induced yield contractions in Aceh (Iswahyudi, 2020). Adriani & Alamsyah (2020) and Paramartha et al. (2020) argued that regions excelling in perishable crops must be supported by post-harvest aggregation infrastructure. Establishing municipal mini cold-storage units and solar-drying facilities within Langsa Lama and West Langsa would protect smallholders from distress-selling during peak harvest periods and buffer urban consumers from localized food inflation.

Second, Promotion of Short Food Supply Chains (SFSCs) and Peri-Urban Intensification. The spatial specialization of Langsa Baro in fast-yielding leafy greens and short-duration legumes (water spinach, cucumber, long beans, eggplant) serves as an ideal foundation for peri-urban Short Food Supply Chains. Short supply chains reduce carbon footprints, minimize post-harvest transit degradation, and capture higher farmgate margins by bypassing extended intermediary trader networks (Latupapua & Lewerissa, 2024). In Langsa Kota, where physical land availability is critically constrained, municipal agricultural intervention should pivot toward controlled-environment urban farming, micro-hydroponics, and vertical horticulture across residential compounds to enhance household dietary diversity.

Third, Statutory Land-Use Protection (LP2B Enforcement). The greatest threat to the continuity of basic vegetable production in Langsa City is the conversion of farmland into residential housing and public facilities, driven by demographic expansion (Iswahyudi, 2020). As underscored by Rustiadi et al. (2011), Aksen et al. (2026), and Sulistyowati et al. (2022), comparative advantage cannot be sustained if the physical resource base continues to erode. Municipal authorities must legally designate and strictly protect prime horticultural parcels in West Langsa, East Langsa, and Langsa Lama under the statutory framework of Sustainable Agricultural Land Protection (Lahan Pertanian Pangan Berkelanjutan / LP2B) within the municipal Spatial Master Plan (RTRW). Concurrently, commodities positioned within the prospective quadrant (LQ <= 1 and SSA > 0), such as shallots and spinach, should be cultivated during inter-cropping cycles through improved certified seed provision and targeted organic fertilizer assistance (Judhaswati, 2025; Pamungkas et al., 2025).

CONCLUSION

This study confirms that leading vegetable commodities in Langsa City are spatially differentiated across administrative sub-districts. The prime commodities (LQ > 1 and SSA > 0) comprise: Red Chili and Long Beans in West Langsa; Red Chili in East Langsa; Tomato and Red Chili in Langsa Lama; Water Spinach, Long Beans,

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Cucumber, and Eggplant in Langsa Baro; and Eggplant in Langsa Kota. All evaluated commodities demonstrated positive shift-share growth (SSA > 0), with water spinach achieving the highest growth efficiency. Municipal policymaking should institutionalize targeted sub-district agribusiness zoning, enforce statutory LP2B farmland preservation, and establish post-harvest cold storage facilities to stabilize vegetable supply chains and ensure local food security.

REFERENCES

Adriani, D., & Alamsyah, I. (2020). Applying the competitiveness analysis for horticultural commodity prospect in Palembang peri-urban area, Indonesia: California papaya (Carica papaya L.) cases. Jurnal AGRISEP: Kajian Masalah Sosial Ekonomi Pertanian dan Agribisnis, 19(2), 447–461. https://doi.org/10.31186/jagrisep.19.2.447-461

Aksen, J. P., Widiatmaka, & Pratikamulya, S. (2026). Identification of leading plantation commodities and financial feasibility of farming in Kaur Regency. Journal of Business, Social and Technology, 7(2), 408–418. https://doi.org/10.59261/jbt.v7i2.638

Ariadi, Z., Nurwahyudi, M. A., Efriandi, E., & Defriyanti, W. T. (2022). The determination of horticultural clusters using superior commodity approach in South Sumatra. In S. Herlinda et al. (Eds.), Prosiding Seminar Nasional Lahan Suboptimal ke-10 Tahun 2022 (pp. 954–962). Palembang: Penerbit & Percetakan Universitas Sriwijaya (UNSRI).

Cipta, S. W., Sitorus, S. R. P., & Lubis, D. P. (2018). Pengembangan komoditas unggulan di wilayah pengembangan Tumpang, Kabupaten Malang. Jurnal Kawistara, 7(2), 121–134. https://doi.org/10.22146/kawistara.12495

Dinas Pangan, Pertanian, Kelautan dan Perikanan Kota Langsa. (2025). Data Luas Tanam, Luas Panen, Produksi dan Produktivitas Tanaman Sayuran Kota Langsa 2021–2025. Pemerintah Kota Langsa.

Faqih, A. (2021). Analisis komoditas unggulan sektor pertanian. JPPI (Jurnal Penelitian Pendidikan Indonesia), 7(4), 548–556. https://doi.org/10.29210/020211242

Iswahyudi. (2020). Karakteristik biofisik sumber daya lahan Kota Langsa, Aceh. Jurnal Penelitian Agrosamudra, 7(1), 31–41. https://doi.org/10.33059/jupas.v7i1.2424

Jafar, R., & Meilvidiri, W. (2022). Analisa Location Quotient (LQ), Dynamic Location Quotient (DLQ), dan Klasifikasi Carvalho dalam Menentukan Potensi Ekonomi Kabupaten Takalar. ICOR: Journal of Regional Economics, 2(3), 29–39. https://doi.org/10.24252/icor.v2i3.27673

Judhaswati, R. (2025). Analisis Komoditas Unggulan Hortikultura di Provinsi Jawa Timur dengan Pendekatan Location Quotient (LQ). Prosiding Seminar Nasional Pembangunan dan Pendidikan Vokasi Pertanian, 6, 898–920. https://doi.org/10.47687/snppvp.v6i1.1839

Latupapua, Y. T., & Lewerissa, E. (2024). Kajian persepsi petani terhadap dampak diversifikasi tanaman hortikultura pada ketahanan pangan rumah tangga di kabupaten dengan risiko kekeringan tinggi. Tumbuhan: Publikasi Ilmu Sosiologi Pertanian Dan Ilmu Kehutanan, 1(1), 46–67. https://doi.org/10.62951/tumbuhan.v1i1.566

Pamungkas, R. A., Natali, E. R., & Albi, R. (2025). Analysis of the potential of leading sectors and mapping of food crops in Magetan Regency. Proceedings of the International Conference on Business, Economic and Sustainability Science (BESS), 173. https://doi.org/10.17977/UM

Paramartha, D., Mukson, & Kristanto, B. A. (2020). Identification of superior commodity in agriculture sector in Magelang Regency. Agrisocionomics: Jurnal Sosial Ekonomi dan Kebijakan Pertanian, 4(2), 247–255. http://ejournal2.undip.ac.id/index.php/agrisocionomics

Rustiadi, E., Saefulhakim, S., & Panuju, D. R. (2011). Perencanaan dan Pengembangan Wilayah (2nd ed.). Yayasan Pustaka Obor Indonesia.

Sulistyowati, E., Wisudawati, T., & Saputro, W. (2022). Analisis Location Quotient Dan Shift Share Dalam Penentuan Sektor Unggulan Perekonomian Kabupaten Penyangga (Studi Kasus Di Kabupaten Sukoharjo Dan Karangnayar). Magisma: Jurnal Ilmiah Ekonomi dan Bisnis, 10, 01–10. https://doi.org/10.35829/magisma.v10i1.156

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