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Identifying regional growth centers for balanced spatial development: Evidence from Badung Regency, Bali Province, Indonesia

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Abstract--This study examines the determination of regional growth centers in supporting spatial development in Badung Regency, Bali Province, Indonesia. The research aims to identify leading economic sectors, determine sub-districts with potential as growth centers, and analyze spatial interactions among sub-districts. A quantitative approach was employed using Klassen typology analysis, scalogram analysis, and gravity model analysis to assess regional economic performance, service capacity, and inter-regional linkages. The findings reveal that the accommodation and food service sector, along with the transportation sector, contributes significantly to the Gross Regional Domestic Product (GRDP) of Badung Regency. Based on the combined analytical results, Kuta, North Kuta, and Mengwi sub-districts are identified as primary growth centers, characterized by advanced economic performance and higher service hierarchies. Meanwhile, Abiansemal and Petang function as hinterland areas that depend on the core regions for economic activities and service access. The gravity analysis indicates strong spatial interactions between growth centers and surrounding areas, suggesting the presence of economic spillover effects that potentially promote more balanced regional development. This study contributes to regional planning literature by providing an integrated analytical framework for growth



center identification at the sub-regional level. The results offer empirical evidence to support more strategic, spatially oriented, and sustainable regional development policies in tourism-driven economies.

Keywords---Growth Center, Regional Development, Spatial Analysis, Klassen Typology, Gravity Model, Bali.

Introduction

Economic development represents a structured and continuous process aimed at improving societal welfare across economic, social, and political dimensions (Sembiring et al., 2021). Beyond mere economic growth, development encompasses structural transformation, institutional improvement, and the expansion of human choices (Ladjin et al., 2022). While economic growth is commonly measured through increases in GDP or GNP, sustainable development requires that such growth be accompanied by infrastructural advancement, institutional strengthening, and investment attractiveness (Raya et al., 2018). Furthermore, national development success is strongly influenced by regional development performance, highlighting the importance of spatially balanced economic strategies (Devi et al., 2023).

Regional development seeks to harmonize natural resources, human capital, technology, and institutional capacity to achieve sustainable welfare (Adisasmita, 2005). One strategic policy instrument frequently adopted to promote regional development is the establishment of growth centers. By concentrating development efforts within strategically selected areas, governments can generate economic spillover effects that stimulate surrounding hinterland regions (Nainggolan, 2011). The growth center approach is considered effective in accelerating regional economic expansion, improving income distribution, and enhancing public welfare (Raya et al., 2018).

Badung Regency, Bali Province, represents a strategic tourism-driven region with significant economic potential. According to BPS Kabupaten Badung (2025), the region experienced substantial economic fluctuations during 2019–2024, including a contraction during the pandemic period and strong recovery in subsequent years. The economic structure of Badung is highly concentrated in tourism-related sectors, particularly accommodation and food services, which contribute an average of 23.14 percent to the Gross Regional Domestic Product (GRDP), followed by transportation and warehousing (11.99 percent) and construction (11.54 percent). In contrast, sectors such as electricity and gas, water supply, and mining contribute marginally to the regional economy (BPS Kabupaten Badung, 2025). Such disparities indicate structural concentration and sectoral imbalance within the regional economy.

Given these conditions, identifying strategic growth centers at the sub-district level becomes essential to promote more balanced spatial development. Badung Regency consists of six sub-districts—Petang, Abiansemal, Mengwi, North Kuta, Kuta, and South Kuta—each with distinct economic characteristics and

development potentials. A spatially oriented growth center analysis is therefore necessary to support more equitable inter-district development and strengthen regional resilience.

Methods

This study adopts a quantitative research design, utilizing numerical data and statistical techniques to examine regional economic structure and spatial development patterns. Quantitative research emphasizes the systematic analysis of measurable variables to produce objective and empirically grounded findings (Sugiyono, 2011). The analytical approach applied in this study is descriptive quantitative analysis, which aims to interpret and present observed data in a meaningful and communicative manner without extending generalizations beyond the units of analysis.

The unit of analysis is the sub-district (kecamatan) level within Badung Regency, Bali Province, Indonesia. Secondary data were collected from official publications of the Central Bureau of Statistics (BPS Kabupaten Badung), particularly Gross Regional Domestic Product (GRDP) data at constant prices and supporting regional indicators. The analysis focuses on three main aspects. First, economic sector classification was conducted using Klassen Typology to identify the relative performance of sectors based on growth rates and contribution levels, allowing classification into leading, potential, developing, and lagging sectors. Second, potential growth centers were identified through scalogram analysis, which evaluates the availability of facilities, infrastructure, and service functions to determine sub-district development hierarchies. Third, spatial interaction among sub-districts was examined using the gravity model, which measures the strength of inter-regional linkages based on population size and distance, thereby assessing the spatial influence of identified growth centers on surrounding hinterland areas.

By integrating Klassen Typology, scalogram analysis, and the gravity model, this study develops a comprehensive spatial-economic framework for identifying strategic growth centers and analyzing their role in promoting balanced regional development in Badung Regency.

Result and Discussion

Economic Sector Classification in Badung Regency

The economic sector classification in Badung Regency was analyzed using the Klassen Typology approach, which categorizes sectors based on their growth rates and contribution levels into four quadrants: advanced and fast-growing sectors, advanced but pressured sectors, rapidly growing sectors, and relatively lagging sectors. This classification provides strategic insight into regional economic prospects and serves as a basis for spatial and development policy formulation.

The analysis of GRDP data (2020–2024) indicates that Badung's economic structure is highly concentrated in several dominant sectors. The accommodation and food service sector contributes the largest share to the regional economy

(23.14%), followed by transportation and warehousing (11.99%), construction (11.54%), and information and communication (10.87%). Meanwhile, the highest growth rates were recorded in transportation and warehousing, information and communication, financial services, and other services. Conversely, mining and quarrying as well as electricity and gas supply experienced declining productivity. Based on Klassen Typology results, the advanced and fast-growing sectors (Quadrant I) include water supply and waste management, transportation and warehousing, accommodation and food services, and information and communication. These sectors function as the primary economic drivers of Badung Regency, particularly reflecting its tourism-oriented economy. Their strong contribution and above-average growth indicate their role as development locomotives capable of generating multiplier effects across related sectors. This finding aligns with previous research (Hartika & Yaspita, 2024), which emphasizes the strategic role of the accommodation and food service sector in tourism-based regional economies.

The advanced but pressured sector (Quadrant II) is construction, which maintains a high contribution but demonstrates relatively lower growth compared to the regional average. Although construction remains vital for infrastructure development, signs of stagnation suggest the need for revitalization through productivity enhancement, technological adoption, and sustainable infrastructure planning to maintain its strategic role in supporting tourism and service sectors. The rapidly growing but low-contribution sectors (Quadrant III) include agriculture, trade, financial services, real estate, corporate services, and government administration. While these sectors show promising growth dynamics, their relatively small economic share indicates untapped potential. Strengthening agriculture and fisheries could enhance food security and support agro-tourism, while financial sector development may improve investment efficiency and regional capital circulation.

Meanwhile, the relatively lagging sectors (Quadrant IV)—such as mining, manufacturing, electricity and gas supply, education, and health services—exhibit both low growth and low contribution. Although economically marginal, these sectors remain fundamental for long-term structural balance and social welfare. Targeted policy intervention is therefore necessary to reduce sectoral disparities and ensure more inclusive development.

Overall, the findings reveal that Badung Regency's economy remains structurally concentrated in tourism-related sectors. While this concentration strengthens economic growth in the short term, it also increases vulnerability to external shocks. Therefore, diversification strategies and balanced sectoral development are essential to enhance economic resilience and promote sustainable regional development.

Potential Sub-Districts as Growth Centers in Badung Regency

The scalogram analysis was employed to identify potential growth centers in Badung Regency based on the availability of public service facilities. A total of 26 facility indicators were examined, covering economic, institutional, educational, health, religious, transportation, and agricultural infrastructure. The analysis

measures the capacity of each sub-district to provide services and support socio-economic activities. Sub-districts with more complete facilities are considered to have higher development potential and are more likely to function as growth centers.

The results reveal a three-tier hierarchical structure. Order I (primary growth centers) consists of Kuta Utara, Kuta, and Mengwi, each possessing the highest number of facility types (25). These areas demonstrate comprehensive economic infrastructure, institutional presence, educational and health services, road networks, and tourism-supporting facilities. According to Tarigan (2005), areas with high concentrations of facilities and economic activities tend to function as growth centers due to their ability to serve surrounding regions. In Badung Regency, these sub-districts form the core of economic activity, particularly driven by tourism, trade, and services. Their integrated infrastructure enhances mobility, strengthens inter-regional interaction, and generates significant multiplier effects.

Order II (secondary growth center) includes Kuta Selatan, which has slightly fewer facilities (24 types) but still plays a strategic supporting role, particularly in tourism and service activities. As noted by Sjafrizal (2012), areas positioned below the primary hierarchy often function as sub-growth centers that extend development effects to surrounding regions. Kuta Selatan complements the economic dominance of Kuta and Kuta Utara, reinforcing the southern economic corridor of Badung Regency.

Order III (hinterland areas) comprises Petang and Abiansemal, each with 20 facility types. These sub-districts are characterized by limited infrastructure and basic public services, leading to higher dependence on higher-order regions. Consistent with Rustiadi et al. (2018), lower-order areas typically function as resource-supplying hinterlands that support core regions through land, labor, and natural resource provision. In the spatial structure of Badung, Petang and Abiansemal serve as agrarian and agropolitan zones, supporting the tourism-driven economy of the southern region.

The findings indicate that spatial development in Badung Regency is concentrated in the southern and central areas, particularly in Kuta, Kuta Utara, and Mengwi, which serve as the primary nodes within the regional economic network. These areas are aligned with the regional spatial planning policy (RTRW) that designates them as tourism-based urban growth centers. Meanwhile, northern areas such as Petang and Abiansemal are directed toward agropolitan development, integrating agriculture, agro-tourism, and rural productivity.

Overall, the scalogram results confirm a hierarchical spatial pattern in which growth is centered in tourism-dominated districts, while northern sub-districts function as supporting hinterlands. Strengthening connectivity across these hierarchical levels is essential to ensure that development benefits are more evenly distributed throughout the regency and to prevent excessive concentration in the southern corridor.

Spatial Interaction between Growth Centers and Surrounding Sub-Districts

The gravity model was applied to measure spatial interaction between identified growth centers and surrounding sub-districts in Badung Regency. The model assumes that interaction intensity is positively related to population size and inversely related to distance. Higher interaction values indicate stronger functional linkages in terms of economic exchange, service provision, labor mobility, and social activities.

The results demonstrate that Mengwi, Kuta Utara, and Kuta exhibit the strongest inter-regional interactions, confirming their role as primary growth centers. The highest interaction value was observed between Mengwi and Kuta Utara (1,029,500,982), indicating a highly integrated economic corridor in central Badung. Mengwi also shows strong interaction with Abiansema (892,333,333), suggesting its strategic function as an intermediary node linking northern agrarian hinterlands (Petang and Abiansema) with the tourism-dominated southern districts (Kuta and Kuta Selatan). This positioning supports its role as a regional connector facilitating flows of goods, services, labor, and economic activities across the regency.

Kuta Utara demonstrates similarly strong interaction with both Mengwi and Kuta Selatan, reinforcing its position as a dynamic urban growth center driven by tourism, trade, and service industries. Meanwhile, Kuta maintains significant interaction with Kuta Selatan (603,396,610) and Kuta Utara (401,493,846), reflecting high mobility and economic integration within the southern tourism cluster. These findings align with growth pole and core-periphery theories (Friedmann, 1966; Tarigan, 2005), which argue that core regions with superior accessibility and infrastructure tend to attract resources and economic activity from surrounding areas.

In contrast, Petang and Abiansema record relatively lower interaction values, confirming their role as hinterland areas that primarily supply natural resources, agricultural products, and labor. As noted by Siregar & Lubis (2022), disparities in spatial interaction often reflect unequal infrastructure distribution and economic concentration. The clustering of high interaction values among the three main centers (Mengwi, Kuta Utara, and Kuta) indicates that economic growth in Badung Regency remains spatially concentrated in the southern and central corridors.

Overall, the gravity analysis reveals a hierarchical and polarized spatial structure in which the southern tourism-based districts function as growth cores, while northern sub-districts act as supporting hinterlands. Strengthening inter-regional connectivity and infrastructure in lower-order areas is therefore essential to ensure more balanced development and to enhance the spread effects of economic growth across the entire regency, consistent with the principles of functional regional integration (Riyadi & Deddy, 2005).

Conclusion

This study confirms that economic development in Badung Regency is structurally concentrated in tourism-driven and service-based sectors, supported by a hierarchical spatial pattern of growth centers. Based on the Klassen Typology analysis, the advanced and fast-growing sectors include water supply and waste management, transportation and warehousing, accommodation and food services, and information and communication. These sectors function as the primary economic engines of the region. Meanwhile, construction is categorized as advanced but pressured, indicating the need for revitalization despite its significant contribution. Rapidly growing sectors—such as agriculture, financial services, real estate, and trade—demonstrate potential for diversification, whereas mining, manufacturing, electricity and gas, education, and health services remain relatively lagging and require strategic strengthening.

The scalogram analysis identifies Mengwi, Kuta, and Kuta Utara as the primary growth centers due to their high service centrality and comprehensive infrastructure. These sub-districts possess superior economic, institutional, educational, and transportation facilities, enabling them to attract and concentrate economic activities. Kuta Selatan functions as a secondary growth center, while Petang and Abiansema operate as hinterland areas characterized by more limited facilities and greater dependency on higher-order districts.

Furthermore, gravity analysis reveals a hierarchical and spatially concentrated interaction pattern in southern and central Badung. Mengwi plays a strategic role as an intermediary node connecting the northern agrarian hinterland with the southern tourism core. Abiansema and Petang function as supporting areas supplying land, labor, and agricultural resources. Overall, the regional system reflects an integrated growth structure with identifiable spread effects from core to periphery, although economic concentration remains evident in tourism-dominated districts.

Managerial Implication

The findings of this study carry important managerial and policy implications for regional development planning in Badung Regency. First, the strong concentration of economic activity in tourism-related sectors suggests the urgent need for strategic economic diversification. While accommodation, transportation, and service sectors function as the primary growth engines, overdependence on tourism increases vulnerability to external shocks. Therefore, local government authorities should strengthen rapidly growing sectors such as agriculture, agro-processing, financial services, and creative industries to build a more resilient and balanced economic structure.

Second, the construction sector—although categorized as advanced but pressured—requires revitalization through sustainable infrastructure development and environmentally responsible urban planning. Investment in green infrastructure, climate-resilient facilities, and integrated transport systems would not only support tourism growth but also enhance long-term regional sustainability.

Third, improving connectivity between primary growth centers (Mengwi, Kuta, and Kuta Utara) and hinterland areas (Petang and Abiansemal) is essential to maximize the spread effect of development. Targeted infrastructure expansion, improved road accessibility, digital connectivity, and enhancement of public service facilities in northern sub-districts would reduce spatial disparities and promote more inclusive regional integration. In parallel, the development of Petang and Abiansemal as agropolitan zones should be strengthened by integrating agriculture, agro-tourism, and local value chains to enhance rural productivity and reduce excessive economic polarization in the southern corridor. Finally, regional spatial planning policies should adopt a multi-nodal growth strategy to prevent excessive concentration in southern tourism clusters. Strengthening secondary growth nodes such as Kuta Selatan can distribute economic benefits more evenly across the regency. Integrated governance and cross-sector coordination between tourism, agriculture, infrastructure, and public services are therefore crucial to ensure sustainable and equitable regional development in Badung Regency.

References

- Adisasmita, R. (2005). *Dasar-Dasar Ekonomi Wilayah*. Graha Ilmu.
- Asmara, N. P., & Aprianti, Y. (2023). Analysis of growth centers and hinterland regions in Samarinda City.
- Hartika, D., & Yaspita, H. (2024). Analysis of the economic potential of Indragiri Hulu District. *Jurnal Manajemen dan Bisnis*, 13(01), 125–135.
- Pratiwi, M. C. Y., & Kuncoro, M. (2016). Analisis pusat pertumbuhan dan autokorelasi spasial di Kalimantan: Studi empiris di 55 kabupaten/kota, 2000–2012. *Jurnal Ekonomi dan Pembangunan Indonesia*, 16(2), 81–104.
- Raya, N., et al. (2018). Analisis identifikasi pusat-pusat pertumbuhan dan wilayah pendukungnya dalam pengembangan wilayah Aceh.
- Riyadi, & Deddy. (2005). *Perencanaan Pembangunan Daerah*. PT Gramedia Pustaka Utama.
- Rustiadi, E. (2018). *Perencanaan dan Pembangunan Wilayah*. Crestpent Press.
- Sembiring, Z. R. B., Antara, M., & Dewi, I. A. L. (2021). Analisis penentuan pusat pertumbuhan dalam pengembangan wilayah di Kabupaten Karo.
- Setioko, M. D., et al. (2021). Pengaruh daya tarik wisata dan aksesibilitas terhadap minat kunjungan wisatawan.
- Siregar, H., & Lubis, A. (2022). Analisis pertumbuhan ekonomi dan ketimpangan pembangunan antar kabupaten/kota.
- Sjafrizal. (2012). *Ekonomi Wilayah dan Perkotaan*. PT RajaGrafindo Persada.
- Sugiyono. (2011). *Metode Penelitian Kualitatif Kuantitatif*. Alfabeta.
- Tarigan, R. (2005). *Ekonomi Regional: Teori dan Aplikasi*. Bumi Aksara.