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The Spatial Economics of Local Wisdom in Local Economic Development: A Case Study of the Bakpia Production Center in Yogyakarta, Indonesia

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ABSTRACT

This study examines how local wisdom and spatial economic dynamics shape Local Economic Development (LED) within the Bakpia Pathuk production center in Yogyakarta. Employing a mixed-methods approach, the research integrates spatial analysis focusing on spatial clustering, spatial embeddedness, and creative economy nodes with regression analysis conducted on 100 bakpia workers selected through stratified random sampling. The findings indicate that skills and educational capacity are the most influential factors in improving workers' well-being ($p = 0.004$). Meanwhile, local wisdom shows a positive yet statistically marginal influence ($p = 0.079$), suggesting that although its cultural and social contributions are strong, its economic impact remains indirect. However, this study has several limitations. The coefficient of determination ($R^2 = 0.122$) is relatively low. This indicates that a substantial proportion of the variation in worker well-being is explained by factors not included in the model, such as access to capital, marketing networks, tourism-related market opportunities, and technology adoption. In Spatial, the bakpia center forms a clear agglomeration pattern that enhances production efficiency, strengthens linkages with the city's tourism network, and positions Pathuk as a creative economy node generating spillover effects for surrounding MSMEs (Micro, Small, and Medium Enterprises). These findings demonstrate that the sustainability of the bakpia industry is shaped by the interaction of cultural values, spatial structure, workforce capacity, and the area's strategic position within Yogyakarta's tourism system. This study contributes new insights by integrating spatial economic analysis and cultural variables to assess LED in a traditional food industry an approach rarely applied in previous research on bakpia or other culture-based small industries in Indonesia.

Keywords: *local wisdom, spatial economics, spatial clustering, embeddedness, creative economy nodes, Local Economic Development, bakpia industry.*

ABSTRAK

Studi ini mengkaji bagaimana kearifan lokal dan dinamika ekonomi spasial membentuk Pengembangan Ekonomi Lokal (LED) di sentra produksi Bakpia Pathuk di Yogyakarta. Menggunakan pendekatan metode campuran, penelitian ini mengintegrasikan analisis spasial yang berfokus pada klaster spasial, keterlekatan spasial, dan simpul ekonomi kreatif dengan analisis regresi yang dilakukan pada 100 pekerja bakpia yang dipilih melalui stratified random sampling. Temuan menunjukkan bahwa keterampilan dan kapasitas pendidikan merupakan faktor paling berpengaruh dalam meningkatkan kesejahteraan pekerja ($p = 0{,}004$). Sementara itu, kearifan lokal menunjukkan pengaruh positif namun secara statistik marginal ($p = 0{,}079$), yang menunjukkan bahwa meskipun kontribusi budaya dan sosialnya kuat, dampak ekonominya masih bersifat tidak langsung. Namun, dalam penelitian ini memiliki beberapa batasan yaitu nilai $R^2 = 0{,}122$ yang berarti nilai tersebut cukup rendah. Hal ini mengindikasikan terdapat beberapa faktor lain yang belum dimasukkan dalam model (seperti akses terhadap modal, jaringan pemasaran, peluang pasar yang berkaitan dengan sektor pariwisata, dan adopsi teknologi. Secara spasial, sentra bakpia membentuk pola aglomerasi yang jelas yang meningkatkan efisiensi produksi, memperkuat keterkaitan dengan jaringan pariwisata kota, dan memposisikan Pathuk sebagai simpul ekonomi kreatif yang menghasilkan efek limpahan bagi UMKM di sekitarnya. Temuan ini menunjukkan bahwa keberlanjutan industri bakpia dibentuk oleh interaksi nilai budaya, struktur spasial, kapasitas tenaga kerja, dan posisi strategis kawasan dalam sistem pariwisata Yogyakarta. Penelitian ini memberikan wawasan baru dengan mengintegrasikan analisis ekonomi spasial dan variabel budaya untuk menilai LED dalam industri makanan tradisional, sebuah pendekatan yang jarang diterapkan dalam penelitian sebelumnya tentang bakpia atau industri kecil berbasis budaya lainnya di Indonesia.

Kata kunci: kearifan lokal, ekonomi spasial, klaster spasial, keterlekatan, simpul ekonomi kreatif, Pengembangan Ekonomi Lokal, industri bakpia.

1. INTRODUCTION

Local Economic Development (LED) is a development approach that emphasizes the use of local potential, capacities, and unique characteristics to improve community welfare (Putri et al., 2021). LED highlights collaboration among government bodies, local businesses, and communities to create an inclusive and sustainable economic environment (Shapira & Youtie, 2006; Yao & Liu, 2022a). Within this framework, local wisdom understood as part of a community's cultural and social capital holds a central position as a cultural resource that contributes to economic resilience and sustainability (Putri et al., 2021). Values passed down across generations do more than shape production patterns and entrepreneurial styles; they also reinforce community identity, social cohesion, and the ability to adapt to change (Hwang & Phillips, 2024; Sulaiman et al., 2022; Vicent et al., 2025).

At the same time, advancements in spatial economics emphasize that location, proximity, and the spatial structure within which economic activities take place significantly influence efficiency and long-term growth (Chao & Lin, 2020; Putra & Tewdwr-Jones, 2026a; Putro & Takahashi, 2024). This theoretical lens is particularly useful in understanding how a local industry including traditional culinary industries can thrive when embedded within spatial environments that support social interaction, accessibility, and market connectivity.

Yogyakarta presents a compelling case where culture, space, and economy interact dynamically. The city is widely recognized as a leading tourism destination in Indonesia, marked by rich cultural traditions and a concentration of educational and heritage sites. The presence of the Yogyakarta Sultanate (Keraton) strengthens its position as a center for Javanese culture. Tourism growth can be observed through the steady rise in the number of star-rated accommodations, with an average annual increase of 9% (BPS, 2024). Visitor numbers also continue to expand between January and July 2024, domestic tourist trips to DIY reached 22.59 million, a 19% increase from the previous year (BPS, 2024). This trend directly drives demand for Yogyakarta's signature souvenirs, including bakpia, especially during peak tourism seasons.

Bakpia Yogyakarta has evolved from a Chinese Javanese culinary tradition into a robust creative culinary industry shaped by local wisdom, spatial dynamics, and its contribution to LED. Cultural values such as *gotong royong*, knowledge transmission, and collective commitment to product quality demonstrate how local wisdom strengthens the competitiveness of creative MSMEs, as evidenced in studies in Yogyakarta and Bali (Mahrinasari et al., 2024a). These values form the foundation for community-based collaboration that sustains local initiatives (Putra & Tewdwr-Jones, 2026a).

As urbanization and tourism continue to grow, bakpia producers have formed a spatial agglomeration influenced by geographic proximity (Chao & Lin, 2020; Teng et al., 2023a; Yao & Liu, 2022b). Strong community interaction patterns in Yogyakarta (Ahmad et al., 2024) and the city's role as a cultural and educational hub (Putro & Takahashi, 2024) further embed the bakpia center into the cultural identity of the city. These spatial and cultural dynamics stimulate job creation, strengthen MSMEs, and enhance the circulation of local economic activity, aligning with LED principles rooted in culture–space–institution interplay (Ettlinger, 2001; Shapira & Youtie, 2006).

Some research has highlighted the importance of social capital and community cooperation in sustaining the bakpia industry (Mahrinasari et al., 2024a; Putra & Tewdwr-Jones, 2026a).

Meanwhile, Yogyakarta's spatial dynamics population density, industrial agglomeration, and accessibility have been shown to influence investment locations and distribution efficiency. Previous studies demonstrate that local economic growth is shaped by interactions between spatial factors and land-use changes (Chao & Lin, 2020; Setiawan et al., 2006; Yao & Liu, 2022a). Studies on the relationship between culture and spatial dynamics have currently developed across various research. However, the integration of discussions linking local wisdom, spatial economic conditions, and local economic development particularly in the Bakpia production center in Yogyakarta still requires further investigation to understand its contribution to strengthening Local Economic Development (LED).

This study seeks to analyze the contribution of local wisdom and spatial economic dynamics within the Bakpia Yogyakarta production center contribute to local economic development. This approach enables a comprehensive assessment of the influence of cultural values and spatial economic structures particularly spatial clustering, spatial embeddedness, and creative economy nodes on local economic performance. The findings are expected to enrich LED literature, especially those incorporating cultural and spatial dimensions, and to provide empirical guidance for local governments and MSME actors in designing adaptive and sustainable local economic development strategies. The research problem in this study is how local wisdom and spatial economic dynamics which include spatial clustering, spatial embeddedness, and creative economy nodes affect local economic development in the Bakpia production center in Yogyakarta.

2. LITERATURE REVIEW

Local wisdom is generally understood as a set of cultural values, social practices, and collective knowledge passed down across generations, shaping the character and identity of local creative industries. Numerous studies emphasize that local wisdom forms a source of competitive advantage for culturally rooted products and services from batik and handicrafts to traditional cuisine (Mahrinasari et al., 2024; Park & Widyanta, 2022). Within the context of Local Economic Development (LED), local wisdom is not merely a symbolic cultural element; it can generate tangible effects on various economic and social variables, helping strengthen the competitiveness of Indonesia's creative industries in both domestic and global markets (Mahrinasari et al., 2024).

Cultural values such as collective work (*gotong royong*), social cohesion, and a commitment to maintaining tradition have also been identified as forms of "cultural social capital" that support the sustainability of community-based economic initiatives (Putra & Tewdwr-Jones, 2026). These traditions enable informal and semi-formal cooperation between local communities and government institutions, allowing local economies to function even in fluctuating market conditions (Ahmad et al., 2024). From another perspective, several studies point out that local wisdom can serve as a mechanism of resistance against top-down development models. Communities often preserve their cultural identity and traditional practices to maintain economic autonomy and prevent cultural homogenization (Mahaswa & Syaja, 2025; Putri et al., 2021).

Yogyakarta's rich cultural landscape reflected in its arts, crafts, and traditional foods has long attracted domestic and international visitors, contributing significantly to local economic activity (Ahmad et al., 2024; Park & Widyanta, 2022; Vitasurya, 2016). Despite this cultural

prominence, previous studies have not specifically examined how local wisdom functions within the bakpia industry an iconic culinary sector that has become one of Yogyakarta's major creative economic assets. This gap highlights the need for a deeper exploration of how cultural values interact with economic dynamics in supporting LED within the bakpia production center.

The spatial economic dynamics of Yogyakarta are characterized by growing population agglomeration, urban expansion, and land-use changes, all of which influence local economic performance (Buchori et al., 2017; Yao & Liu, 2022a). Spatial factors such as proximity to traditional markets, transportation networks, and tourism facilities play an essential role in determining distribution efficiency and connectivity among local economic actors, including bakpia producers (Ahmad et al., 2024).

In spatial economics, interregional relationships are often explained through the concepts of spatial dependence and spatial convergence suggesting that neighboring areas tend to influence one another's economic development, particularly when both exhibit strong concentrations of population and economic activity (Yao & Liu, 2022a). Prior research also shows that real estate development, demographic changes, and technological advancement significantly contribute to regional economic growth, with real estate often becoming the dominant driver (Idham, 2018; Rahmatullah et al., 2025; Teng et al., 2023b).

Overall, the literature demonstrates that local wisdom and spatial economic dynamics operate simultaneously in shaping local economic development. Cultural values such as collective work norms, inherited knowledge, and community solidarity form a social foundation that allows local industries to endure, adapt, and grow (Mahaswa & Syaja, 2025; Mahrinasari et al., 2024b; Putra & Tewdwr-Jones, 2026b). Meanwhile, spatial dynamics such as industrial agglomeration, distribution efficiency, and inter-area connectivity act as structural forces supporting economic performance (Ahmad et al., 2024; Buchori et al., 2017; Yao & Liu, 2022a).

In the specific context of the Bakpia Pathuk production center, earlier studies indicate that culturally rooted industries can thrive when they benefit from a strong spatial structure, tourism market access, and a consistent local identity (Chou et al., 2024; Park & Widyanta, 2022a; Thalib et al., 2024). However, no prior research has comprehensively integrated local wisdom, spatial economics concepts (spatial clustering, spatial embeddedness, and creative economy nodes), and LED within a single empirical framework. This research gap provides a strong rationale for undertaking this study.

3. METHODOLOGY

3.1 Data

This study employs two types of data: secondary data and primary data. Secondary data were obtained from several relevant institutions, particularly the Department of Cooperatives and MSMEs of the Special Region of Yogyakarta (DIY) and the Yogyakarta City Development Planning Agency (Bappelitbangda). These data include information on the development of the bakpia industry, the number and distribution of business units, spatial patterns of the production center, and documents related to local economic development planning.

Primary data were collected through a structured questionnaire designed to measure the influence of local wisdom on the well-being of bakpia workers. Based on data obtained from the Department of MSMEs (Dinas UMKM) of the Special Region of Yogyakarta, the total

population of bakpia workers in Yogyakarta City is estimated to reach 375 informal workers. Based on this population size, the sample size was determined using Slovin's formula with a 5% margin of error (α), resulting in a minimum required sample of 194 respondents. However, due to field constraints and the limited availability of respondents, only 100 respondents were successfully collected. Therefore, the current dataset represents a smaller sample size, which implies a higher error rate of approximately 8.6%. Consequently, this study is considered a pilot project and is positioned as an exploratory analysis.

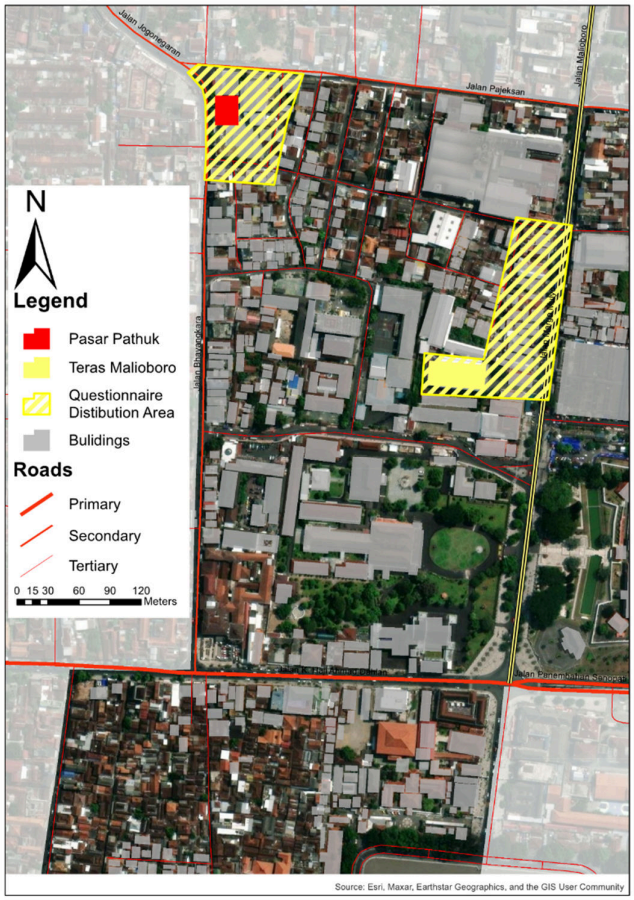


Figure 1. Distribution Map of Questionnaire Respondents
Source: Author's Analysis, 2025

The sampling method used in this research is stratified random sampling, drawn from two main worker concentrations: the Pasar Pathuk area (Bakpia Pathuk Center) and the Malioboro area. These two locations represent different characteristics. Pasar Pathuk hosts a high concentration of both production and sales activities, while the Malioboro area is dominated by sales, although several stalls also conduct production on-site.

3.2 Methods

This study adopts a mixed-methods approach, combining quantitative and qualitative methods to understand the role of local wisdom, spatial economic dynamics, and their contributions to Local Economic Development (LED) within the bakpia production center in

Yogyakarta. The study employs a combination of spatial analysis, statistical analysis, and descriptive analysis.

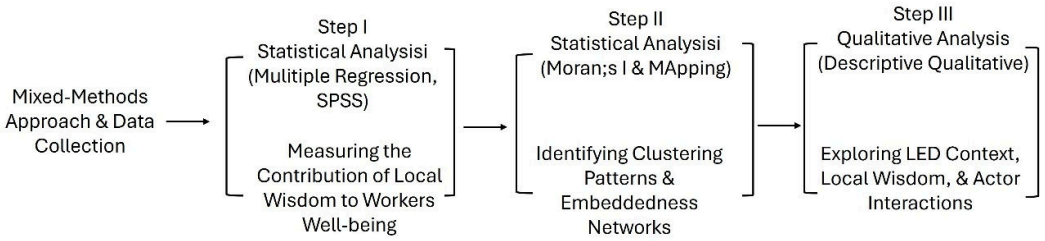


Figure 2. Research Framework
Source: Author's Analysis, 2025

The research process begins with a quantitative approach. Quantitative data were collected through a questionnaire survey involving 100 informal bakpia workers. The survey results were then analyzed using multiple regression analysis with the aid of SPSS software. The objective of this analysis was to measure the extent to which local wisdom influences the welfare level of informal bakpia workers.

Before interpreting the multiple linear regression results, several diagnostic tests were conducted to assess the underlying assumptions of the regression model. These included residual normality, multicollinearity, and heteroscedasticity tests. Residual normality was assessed using the Shapiro Wilk test, while multicollinearity was examined through tolerance and Variance Inflation Factor (VIF) values. Heteroscedasticity was evaluated using the Glejser test. Autocorrelation was also assessed using the Durbin Watson statistic. These diagnostic procedures were conducted to evaluate the reliability of the regression model and the validity of the statistical inference.

The next stage employed a qualitative approach to analyze the relationship between spatial economic dynamics, manifestations of local wisdom, and their influence on Local Economic Development (LED) within the bakpia production center (figure 2). This analysis was based on data obtained through in-depth interviews with bakpia business owners, the Department of Cooperatives and MSMEs of the Special Region of Yogyakarta (DIY), and the Yogyakarta City Regional Development Planning Agency (Bappelitbangda), focusing on local economic development within the bakpia center.

This stage also integrated spatial analysis using ArcGIS. Spatial data collected from field surveys and official planning documents were analyzed to examine three key spatial economic concepts: spatial clustering, spatial embeddedness, and creative economy nodes. Spatial clustering analysis was conducted using Moran's I to identify the degree of spatial autocorrelation and determine whether bakpia-related economic activities exhibit clustered, dispersed, or random spatial patterns. Meanwhile, spatial embeddedness and creative economy nodes were analyzed through spatial mapping to examine spatial relationships, accessibility, and the interconnectedness among actors and business locations within the local economic network. These three concepts were subsequently used to assess their collective influence on Local Economic Development (LED) within the bakpia production center.

4. RESULTS

4.1 The Influence of Local Wisdom on the Well-Being of Bakpia Workers in Yogyakarta

The effects of local wisdom within the bakpia production center were examined using multiple linear regression analysis with SPSS. Before conducting the analysis, several variables and indicators were identified based on the literature and adjusted to field conditions. Table 1 presents the variables and indicators used in this study.

Table 1. Variables and Indicators Used in the Study

	Variable	Indicators	Source
Dependen	Economic Well-Being	income level dependence on the bakpia industry additional earnings (bonuses) perception of prospects	(Sulaiman et al., 2022; Thalib et al., 2024; Xiao et al., 2023)
Independen	Social–Institutional Aspects	quality of social relations among workers availability of worker social communities	(Alamineh et al., 2023; Sulaiman et al., 2022)
	Skills and Education	access to training or work-related courses involvement in external training programs perceived improvement in skills or work-related knowledge	(Chou et al., 2024; Hwang & Phillips, 2024)
	Local Wisdom	traditional practices traditional ethical values local knowledge	(Putri et al., 2021; Sungkharat et al., 2010)

Source: Author's Analysis, 2025

The results of the multiple linear regression are summarized in Table 2. The three independent variables collectively show a moderate relationship with workers' well-being, indicated by an R value of 0.349 and an R^2 value of 0.122. This means that 12.2% of the variation in well-being can be explained by local wisdom, social–institutional conditions, and skills–education, while the remaining 87.8% is influenced by other factors. The F-test also indicates that the model is statistically significant ($p = 0.006$), confirming that at least one independent variable meaningfully affects well-being.

Table 2. Summary of Multiple Linear Regression Results

Aspect	Value	Interpretation
R	0.349	Moderate collective relationship between the three independent variables and well-being.
R^2	0.122	About 12.2% of well-being is explained by the three variables; the rest is driven by other factors.
F (ANOVA)	4.427, p = 0.006	Model is statistically significant.
Durbin-Watson	1.982	No autocorrelation: residuals are random.

Source: Author's Analysis, 2025

Table 3. Regression Diagnostic Test Results

Diagnostic test	Indicator	Result	Interpretation
Normality	Shapiro-Wilk	0.890; p < 0.001	Non-normal residuals
Multicollinearity	VIF (Social–Institutional)	1.013	No serious multicollinearity
	VIF (Skills & Education)	1.013	No serious multicollinearity
	VIF (Local Wisdom)	1.014	No serious multicollinearity
Heteroscedasticity	Glejser (Social–Institutional)	0.416	No indication
	Glejser (Skills & Education)	0.068	No indication
	Glejser (Local Wisdom)	0.622	No indication
Autocorrelation	Durbin-Watson	1.982 (article)	No substantial indication

Source: Author's Analysis, 2025

The diagnostic test results presented in Table 3 indicate that the regression model has met most of the classical assumptions. Based on the Shapiro–Wilk normality test, the statistic was 0.890 with a significance value of $p < 0.001$, indicating that the residuals are not normally distributed. Furthermore, the multicollinearity test results show that all independent variables have tolerance values above 0.10 and VIF values close to 1.00. This indicates that there is no serious multicollinearity among the independent variables. The heteroscedasticity test using the Glejser method also shows that the significance values of all independent variables are above 0.05, at 0.416, 0.068, and 0.622, respectively. Therefore, no indication of heteroscedasticity was found in the regression model. Meanwhile, the Durbin–Watson value of 1.982, which is close to 2, indicates no substantial evidence of autocorrelation. Overall, although the residuals are not normally distributed, the results of the other diagnostic tests indicate that most of the regression assumptions have been met.

Table 4. Coefficients and Statistical Significance

Variable	B (Unstandardized)	Beta (Standardized)	Sig. (p-value)	Interpretation
(Constant)	0.651	-	0.000	Baseline well-being when all independent variables = 0
Local Wisdom	0.124	0.171	0.079	A positive but not yet significant effect at the 0.05 level (although approaching it and can be considered marginal)
Social–Institutional	0.053	0.085	0.381	Not significant and shows a weak effect
Skills & Education	0.188	0.281	0.004	Statistically significant. This variable has the strongest influence on welfare

Source: Author's Analysis, 2025

The results in Table 4 indicate that local wisdom has a positive but not yet statistically significant effect on well-being ($p = 0.079$). Although not meeting the 95% confidence threshold, the marginal significance suggests a meaningful tendency: traditional practices, local ethical values, and inherited knowledge contribute to workers' sense of identity and social cohesion, even if their direct economic impact is still limited. The social–institutional variable shows a weak, non-significant effect ($p = 0.381$). This aligns with field observations revealing

that formal organizational structures among workers are limited, despite strong informal social ties. Strengthening worker associations or cooperatives could potentially enhance this variable's future impact.

In contrast, skills and education emerge as the strongest predictor of well-being ($p = 0.004$). Access to training, opportunities for skill development, and learning-by-doing experiences clearly improve workers' productivity, confidence, and earning potential. This finding aligns with broader research highlighting human capital as a key determinant of MSME competitiveness.

4.2 Spatial Clustering of the Bakpia Production Center in Yogyakarta

The bakpia production center has evolved not only as a traditional food manufacturing site but also as an economic space characterized by patterns of clustering, socio-spatial embeddedness, and creative functions that shape regional competitiveness (Putro & Takahashi, 2024; Teng et al., 2023b). The spatial economics approach applied to the Bakpia Center in Yogyakarta is closely linked to the concept of Local Economic Development (LED), as both emphasize the importance of leveraging local potential and spatial structures to stimulate community economic growth (Ahmad et al., 2024; Rahmatullah et al., 2025; Shapira & Youtie, 2006). This section presents the research findings through three key concepts in spatial economics, which are then connected to LED theory: the phenomenon of spatial clustering, spatial embeddedness, and creative economy nodes. The data used in these three analytical approaches were derived from field surveys and spatial data analysis, supported by literature and information provided by government agencies in Yogyakarta City.

4.2.1 Spatial Clustering Sentra Bakpia Kota Yogyakarta

The spatial clustering approach originates from spatial economics and economic geography, which argue that firms tend to concentrate in strategic locations to gain collective efficiencies and shared advantages (Sulaiman et al., 2022; Xiao et al., 2023). Over time, these concentrations evolve into what is commonly recognized as industrial centers or production hubs. This is consistent with Weber's location theory, which explains that economic activities naturally gravitate toward areas close to raw materials or their primary markets (Marianov & Eiselt, 2024).

In this study, spatial clustering was identified through the spatial concentration of bakpia production and distribution activities in Yogyakarta. One of the most prominent clusters is located in Pasar Pathuk, a traditional market widely known as the birthplace of bakpia production in the city. Numerous stalls in this market are involved in both producing and selling bakpia, forming a dense cluster of interconnected economic activities.

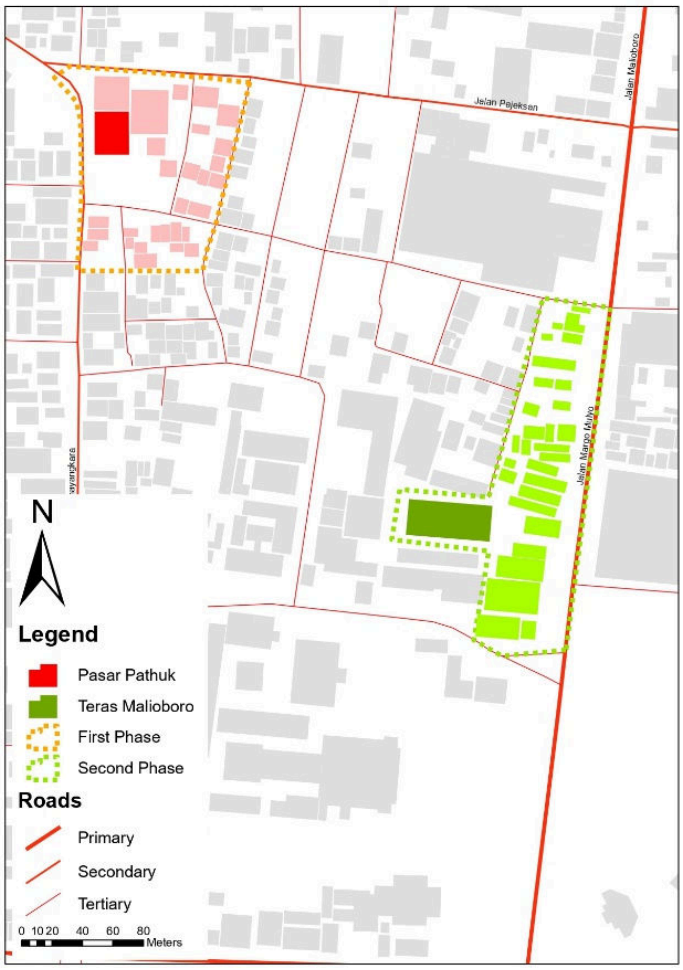


Figure 3. Spatial Clustering Map of the Bakpia Center in Yogyakarta
Source: Author's Analysis, 2025

The spatial pattern revealed in Figure 3 indicates that the bakpia industry continues to form and reinforce its clustering behavior. Most producers operate within a relatively compact geographic area, creating a clearly identifiable production center based on spatial mapping results. Historically, the Bakpia Pathuk area marked the initial growth of the industry, with early producers adopting stall numbers as brand identity—examples include "Bakpia Pathok 25" and "Bakpia Pathok 75," both originally referencing specific kiosk numbers at the market. Today, the area is known not only for its products but also for the visitor experience observing the production process directly.

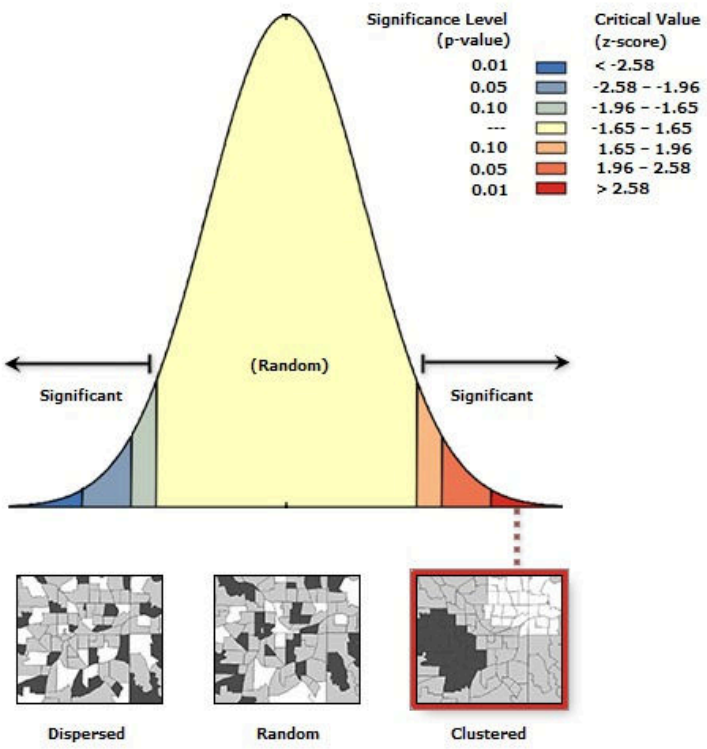


Figure 4. Statistical Significance and Spatial Pattern Classification Using Z-Score (Dispersed, Random, and Clustered Patterns)
Source: Author's Analysis, 2025

Table 5. Moran's Summary

Component	**Value**
Moran's Index	0.239671
Expected Index	-0.035714
Variance	0.010614
Z-score	2.672973

Source: Author's Analysis, 2025

To further understand the spatial pattern underlying this centrality, Moran's I analysis was employed to test whether the distribution of bakpia-based economic activities in the Pathuk area occurs randomly or exhibits spatial dependence. The results (Figure 4 and Table 5) indicate a positive spatial autocorrelation, with a Moran's I value of 0.239671, which is higher than the expected index (expected index = -0.035714). This suggests that similar values tend to cluster geographically rather than being randomly distributed. Furthermore, the Z-score of 2.672973, which exceeds the critical value of 1.96 at the 5% significance level, indicates that this clustering pattern is statistically significant and unlikely to occur by chance. Accordingly, MSME activities in Pathuk are not isolated units but form a pattern of agglomeration, where high-activity areas tend to be surrounded by other high-activity areas. This spatial clustering strengthens Pathuk's position as a key production and commercial node within the bakpia network, where spatial proximity facilitates interaction, competition, and spillover effects among business actors.

As tourism expanded over time particularly with the rise of Malioboro as a commercial corridor several bakpia producers established additional outlets in the Malioboro area. Although some production activities still occur there, the stalls in Malioboro are more regulated under the city's spatial policy and are generally concentrated in the "Teras Malioboro" commercial zone. Unlike in Pathuk, production activities in Malioboro are not open to public viewing.

Based on the findings, the Pathuk area can be characterized as an industrial center rather than a fully developed industrial cluster. Prior studies explain that an industrial center generally reflects geographic concentration without functional specialization across firms (Marianov & Eiselt, 2024; Sulaiman et al., 2022). In contrast, a full industrial cluster involves differentiated roles along the value chain such as specialized suppliers, dedicated packaging services, logistics networks, and other supporting industries. Field observations show that in the Bakpia Pathuk center, most producers still operate independently, handling all stages of production from sourcing raw materials to packaging and selling the final product. The absence of functional specialization and supporting industries indicates that the ecosystem is still centered on spatial proximity rather than inter-firm integration. As a result, the Pathuk area retains the characteristics of an industrial center instead of a mature, value-chain-integrated cluster (Hwang & Phillips, 2024).

However, from a Local Economic Development (LED) perspective, this spatial concentration still has meaningful implications. The cluster acts as a local economic engine, generating employment opportunities, attracting tourist flows, and spurring the growth of secondary businesses such as souvenir shops, transportation services, and packaging providers. The geographic proximity among bakpia producers also facilitates informal knowledge sharing, product innovation, and mutual learning, which enhance the competitiveness of the industry. Overall, the spatial clustering of the Bakpia Pathuk area serves not only as a structural feature of the industry but also as a foundational element supporting the local economic development of Yogyakarta.

4.2.2 Spatial Embeddedness Sentra Bakpia Kota Yogyakarta

Spatial embeddedness, originating from spatial economics and economic geography, views economic activities as being deeply intertwined with the social, cultural, and institutional contexts of a place. In the case of the bakpia industry, local wisdom does not simply function as a cultural attribute it becomes embedded in the spatial and organizational structure of production itself. In other words, traditions, work ethics, and inherited practices are not just cultural artifacts; they live within the spatial layout and everyday routines of the bakpia production landscape. Field findings reveal that spatial embeddedness in the Bakpia Pathuk center manifests through four interconnected layers that shape how economic activities are linked to the local context. First, Spatial Identity (Vicent et al., 2025). Second, Cultural Practices (Park & Widyanta, 2022b). Third, Industrial Spatial Structure (Alamineh et al., 2023). Fourth, Variation in Embeddedness (Alamineh et al., 2023).

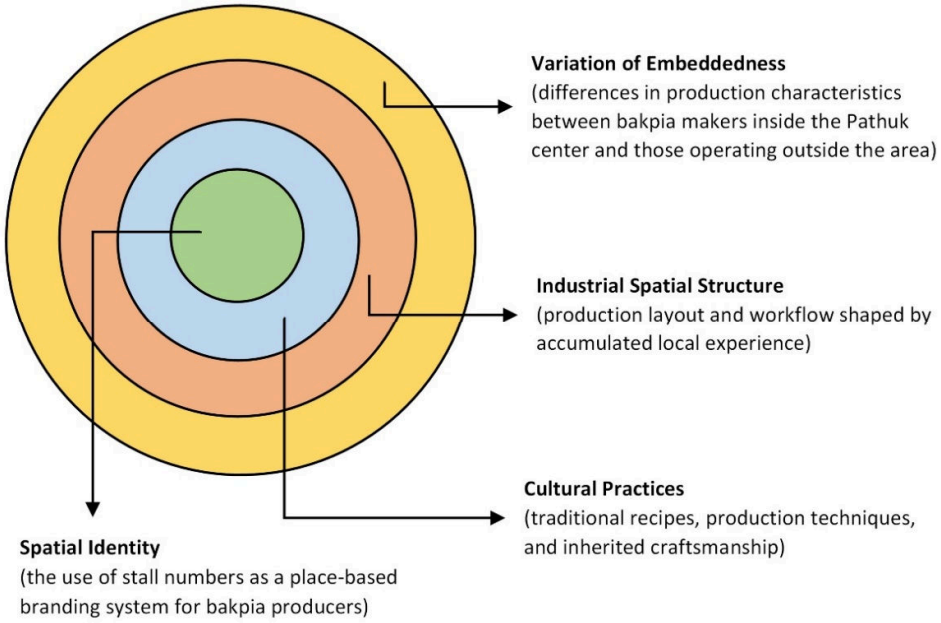


Figure 5. Diagram of Spatial Embeddedness Practices in the Bakpia Pathuk Center
Source: Author's Analysis, 2025

Figure 5 highlights how the four layers operate as an integrated system. At the core, spatial identity emerges from how producers embed their location into their brand identity an approach rarely found in similar traditional industries. This identity is inseparable from cultural practices, such as recipe preservation, manual dough preparation, and long-standing production rituals. These two layers then shape the industrial spatial structure, reflected in how production rooms are arranged, how ovens and tools are placed, and how the workflow follows patterns developed through years of local practice. This structure is not merely functional; it reflects the embodiment of cultural knowledge in physical space.

The outer layer, variation of embeddedness, shows the difference between producers inside and outside the Pathuk center. Producers within Pathuk tend to retain traditional characteristics more consistently, resulting in a more classic bakpia taste and production style. Meanwhile, those outside the core area tend to innovate with flavors, branding, and techniques, indicating a looser connection to the original spatial cultural identity. Taken together, these layers demonstrate that embeddedness in the Bakpia Pathuk center is not only social or cultural it is physically and spatially manifested. This spatial embeddedness strengthens the continuity of the bakpia tradition and becomes a foundation for sustaining local economic development. It aligns with theories emphasizing how place-based identities and cultural practices can reinforce the resilience and distinctiveness of local industries (Thalib et al., 2024).

4.2.3 Creative Economy Node of the Bakpia Production Center in Yogyakarta

The concept of creative economy nodes highlights how certain locations function as focal points of creativity, innovation, and cultural interaction that stimulate local economic dynamics. In this context, the Bakpia Pathuk production center holds a strategic advantage simply by being located in Yogyakarta a city with a highly developed tourism industry and strong cultural identity. Even major heritage attractions located outside Yogyakarta City, such as Borobudur

Temple and Prambanan Temple, significantly increase tourist flows into the city, reinforcing the market potential for bakpia as a signature culinary souvenir.

From a creative economy perspective, the Bakpia Pathuk center operates as a node of creative production and cultural consumption. Its location within a strategic urban corridor surrounded by the Keraton Yogyakarta, the Malioboro commercial district, and various urban tourism destinations creates a dense concentration of creative activities that amplify one another. This concentration generates creative spillover effects, strengthening both the bakpia industry and related sectors, including street vendors, souvenir shops, packaging services, and local transportation services.

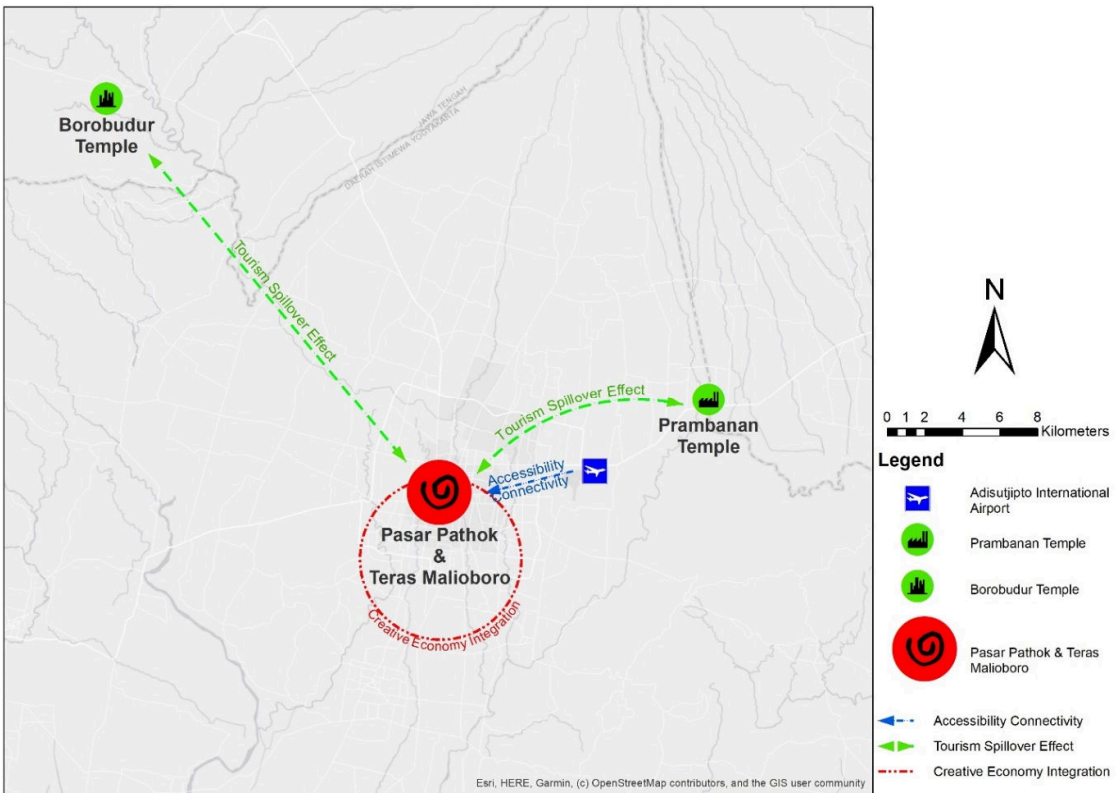


Figure 6. Spatial Positioning of the Bakpia Pathuk Creative Economy Node
Source: Author's Analysis, 2025

Figure 6 shows that Pathuk occupies a central position within Yogyakarta's tourism network. As one of the primary culinary destinations, it naturally becomes a stopping point for tourists traveling along the city's main cultural corridor from Malioboro toward various heritage sites. People entering the city through the Adisutjipto International Airport or traveling between districts often pass through commercial routes near Pathuk, making it a highly visible and accessible node.

This spatial visibility enhances the economic strength of the bakpia center. The market for bakpia is driven not only by residents but largely by domestic and international visitors who often purchase bakpia as a "memory good," a product that captures their travel experience. Consequently, the center functions at a scale much larger than a typical traditional market, catering to a diverse and geographically dispersed consumer base.

From an LED perspective, Pathuk's role as a creative economy node illustrates how traditional industries can evolve through interactions between spatial positioning, cultural identity, and tourism mobility. The spatial network surrounding Pathuk including shopping centers, tourist attractions, hotels, and transportation corridors acts as a generator of visitor movement, feeding continuous demand into the production center. This network forms a mutually reinforcing system: tourism generates demand for bakpia, while bakpia strengthens Yogyakarta's identity as a cultural and culinary destination.

In this way, the Bakpia Pathuk center is more than a production site it is an integral node within Yogyakarta's creative economy. Its embedded cultural identity, proximity to tourism hotspots, and ability to attract visitor flows position it as a key driver in supporting the city's local economic development.

5. DISCUSSION

The findings of this study show that the interaction between local wisdom, spatial dynamics, and workers' capacities forms an interconnected pattern that shapes both the development of the Bakpia Pathuk production area and the well-being of its workers. The quantitative results indicate that local wisdom has a positive, although not yet statistically significant, influence on workers' welfare. This suggests that cultural values and long-standing traditions function more as social capital reinforcing identity and community solidarity than as a direct economic driver. This interpretation aligns with the spatial embeddedness perspective within spatial economics, which argues that economic practices are rooted in historically shaped networks of values, traditions, and social relations; therefore, their contributions often appear in non-material forms. The findings also reinforce previous studies that position local wisdom as an important foundation for sustaining traditional industries, even though the benefits do not always translate into immediate income gains (Mahrinasari et al., 2024).

In contrast, workers' skills and educational backgrounds show a significant effect on welfare outcomes. This confirms that human capital enhancement remains a central factor in widening economic opportunities, consistent with literature arguing that technical competence and access to training shape workers' competitiveness in the MSME sector (Rindrasih et al., 2024). These findings help explain why some bakpia producers report faster income growth than others those with the ability to adapt to market demands and adopt production innovations tend to improve their economic position more quickly.

From a spatial perspective, the study finds that the concentration of bakpia producers in the Pathuk area forms a strong pattern of spatial clustering. This agglomeration is consistent with spatial economics and Weber's location theory, which emphasize that geographical proximity reduces distribution costs, eases market access, and opens opportunities for collaboration. However, field observations show that this agglomeration remains at the level of a traditional industrial center and has not yet evolved into a modern industrial cluster. The absence of functional role differentiation—ranging from raw material suppliers to packaging units—indicates that relationships among producers remain largely individual rather than integrated within a coordinated value chain. Despite this limitation, the spatial structure still plays an important role in supporting local economic development, particularly because its proximity to major tourist destinations such as Malioboro, the Yogyakarta Palace, Borobudur Temple, and

Prambanan Temple enhances demand and strengthens its position as a signature culinary industry.

The analysis of spatial embeddedness reveals that spatial identity, cultural practices, and the use of production space operate as a coherent system sustaining the continuity of the bakpia industry. The use of numbered kiosks as brand identifiers and the persistence of traditional production techniques passed down across generations illustrate how cultural elements create product differentiation while maintaining authenticity valued by consumers. Producers located in the Pathuk core area tend to preserve these traditions, whereas those outside the core exhibit more variation in techniques and product innovations. This divergence supports theories on differing levels of embeddedness across locations and explains why bakpia characteristics may vary even within the same industry. At the same time, the findings show that the Bakpia Pathuk area functions as a creative economy node connected to the city's tourism system. Its geographical closeness to tourism corridors generates steady visitor flows and leads to creative spillovers, such as the expansion of souvenir shops and food delivery services. These observations echo creative city literature emphasizing the role of cultural spaces and tourism interactions in driving innovation and local economic growth.

The theoretical contribution of this study lies in integrating local wisdom, spatial economics, and local economic development (LED) strategies, demonstrating that these three elements do not operate in isolation but reinforce one another in shaping the competitiveness of traditional industries. The study provides empirical evidence that local economic development cannot be fully understood without considering the socio-cultural context and spatial structures within which economic activities take place. Practically, the findings offer a basis for local governments and industry actors to strengthen skill-development programs, build worker-oriented institutions, and develop shared value chains to optimize the benefits of agglomeration.

This study should be understood as an exploratory study (pilot project) aimed at identifying the initial relationships between local wisdom, spatial economic dynamics, and Local Economic Development (LED) within the bakpia production center in Yogyakarta. Although the minimum sample size was determined using the Slovin formula with a 5% margin of error, the number of valid respondents obtained in the field remained below the targeted sample size, which may affect the representativeness of the sample and limit the generalizability of the findings. Furthermore, the relatively low coefficient of determination ($R^2 = 0.122$) indicates that workers' welfare is also influenced by various factors that were not included in the model, such as access to credit, e-commerce adoption, entrepreneurial capacity, and institutional support. Therefore, the findings of this study should be regarded as preliminary evidence that can serve as a foundation for future research with larger sample sizes, more diverse variables, and broader geographical coverage. The findings are also expected to be more applicable to tourism-oriented cities or culturally based economic centers that possess strong local identities and similarly embedded local economic networks, such as the bakpia production center in Yogyakarta.

6. CONCLUSION

Overall, this study shows that local wisdom and spatial economic dynamics including spatial clustering, spatial embeddedness, and creative economy nodes contribute to shaping

local economic development in the Bakpia Production Center in Yogyakarta through the interaction of cultural values, spatial structure, worker capacity, and proximity to the urban tourism system, all of which collectively support the sustainability and economic contribution of the center. The findings indicate the need for policies that do not only focus on improving production capacity but also on strengthening local economic networks and institutional arrangements.

Based on the results of this study, the Government of Yogyakarta City is encouraged to facilitate the establishment of cooperatives or associations of bakpia workers and business actors to strengthen coordination among stakeholders, improve access to financing, and promote specialization within the production value chain. In addition, the development of the Pathuk area should be directed toward becoming an integrated creative economy cluster linked to the tourism sector through strengthening area identity, promoting culture-based local branding, and developing collaborative spaces that support business innovation. However, as an exploratory study (pilot project), this research has limitations because the number of respondents was below the minimum target calculated using the Slovin formula with a 5% error margin, thereby limiting representativeness and generalizability, while the relatively low coefficient of determination ($R^2 = 0.122$) indicates the presence of other factors outside the model. Therefore, future research is recommended to use a larger sample size, more diverse variables, and to test the model in other culturally based economic centers to strengthen these findings.

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