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Preference Gaps Between Developers and Millennials in Landed Housing in Yogyakarta Urban Agglomeration

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Abstract
The increasing urbanization in Yogyakarta Urban Agglomeration has driven rapid residential development, especially in landed housing. This study analyzes the gap between property developers' preferences and millennial consumers' expectations in housing provision. Utilizing mixed methods, primary data were collected from 54 property practitioners through structured questionnaires and in-depth interviews. Quantitative analysis included Exploratory Factor Analysis (EFA), Pearson Correlation, and K-Means Clustering to identify dominant developer preferences. Qualitative phenomenological analysis confirmed market trends and millennial preferences. The findings reveal that developers prioritize factors such as land position, house type, and land shape, while millennial consumers emphasize affordability, accessibility, and neighborhood comfort. A comparative analysis using Principal Component Analysis (PCA) and independent t-tests revealed significant preference misalignments, particularly in access to main roads and environmental quality. The study highlights the necessity for coordinated policy intervention and developer adaptation to align housing supply with millennial demands, proposing the integration of public facility proximity and price affordability into future residential planning strategies. This research contributes by highlighting the mismatch in housing value perceptions between stakeholders and consumers. Practically, these insights provide policymakers and developers with a framework for designing housing policies and projects that better integrate affordability, accessibility, and livability, ensuring that they meet the housing needs of millennials.

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Introduction

Urbanization has become a dominant trend in global development. According to the World Bank (2015), 50% of the global population lived in urban areas. This figure is projected to rise to 70% by 2050. Urban centers attract migration from rural areas because of the perception of better economic opportunities and quality of life (Prativi et al., 2024). In Yogyakarta, Indonesia, this trend has led to spatial expansion into Sleman and Bantul Regencies (DIY Regulation No. 2, 2010), creating a growing urban agglomeration. Sleman Regency plays a pivotal role, serving as the primary growth pole of Yogyakarta's northern corridor. Its strategic location—bordering the city and hosting educational institutions, hospitals, and commercial hubs—makes it the most attractive spot for housing development. As a result, Sleman has experienced rapid increases in land prices and a concentrated supply of housing. However, this growth has not been matched by the provision of affordable housing. Thus, millennials and lower-income households are pushed to peripheral areas with limited access to jobs and services. Limited land and speculative practices further intensify affordability challenges in Sleman compared to other regions in the agglomeration.

Understanding the housing dynamics in Sleman is crucial because it serves as a microcosm of broader urbanization pressures in Indonesia. Young adults demonstrate a clear willingness to financially support circular business models in affordable housing, particularly favouring high-level attributes such as reused materials, green facilities, furniture services, and advanced energy and waste management, reflecting a growing alignment between sustainability values and housing preferences (Lee et al., 2024). Housing affordability for millennials is both an economic issue and a social one, influencing labor mobility, family formation, and urban inclusivity. If misalignments between developer supply and consumer demand continue, the region risks deepening socio-spatial segregation and undermining sustainable urban growth. Thus, discussing this issue is vital for policymakers, developers, and academics looking for solutions to urban housing crises in emerging economies.

While many studies have examined housing demand using hedonic pricing or spatial econometric approaches (Mohd Aini et al., 2025; Rey-Blanco et al.,2024; Soltani et al., 2021), these largely focus on price determinants and market-level behavior. Existing research often overlooks the direct comparison between developer strategies and consumer (millennial) preferences within a single analytical framework. In particular, there is a scarcity of empirical evidence from Indonesia—especially in Sleman—where urbanization is rapidly transforming land use while the affordability gap for housing widens. Moreover, most studies either emphasize consumer preferences or developer strategies in isolation, rather than exploring the points of divergence and convergence between the two. Despite a growing body of literature, little is known about how the supply-side logic of developers in Indonesia's rapidly urbanizing regions differs from the affordability restrictions faced by millennials. By explicitly connecting both perspectives, this study bridges that gap and identifies structural and behavioral mismatches that influence housing market equilibrium.

The novelty of this study lies in integrating supply-side (developer) strategies and demand-side (millennial) expectations within a single analytical framework—an approach that outperforms earlier studies, which typically treated these dimensions separately. This integration is important because it enables a comprehensive diagnosis of housing market inefficiencies by combining statistical measurement with behavioral interpretation. The mixed-method design not only quantifies preference divergence using factor, correlation, and clustering analyses but also uncovers the perceptual and contextual drivers of these differences through qualitative inquiry. This dual-lens approach bridges the gap between economic modeling and human-centered housing behavior, providing deeper theoretical insight into how supply-demand imbalances arise in developing urban contexts. Beyond its conceptual contribution, the study offers practical relevance by guiding policymakers and developers in designing housing strategies that better align affordability, accessibility, and livability with millennial expectations. Therefore, the purpose of this research is to

analyze and compare the preferences of property developers and millennial consumers in landed housing within Yogyakarta's urban agglomeration to identify actionable strategies for bridging the supply–demand gap.

Literature Review

The expanding trend of urbanization has caused significant changes in housing demand, especially in developing urban agglomerations such as Yogyakarta. According to Poku-Boansi et al. (2023) and Tripathi & Mahey (2017), urbanization is significantly correlated with economic growth and limit access to homeownership, which drives land demand in surrounding regions. Urban growth patterns, such as the expansion from dense city centers to lower-density suburban areas, shape the types of housing developed (Zhang & Miller, 2024). However, the availability of land remains relatively fixed, posing affordability challenges (Wang et al., 2025). Millennials are most affected by this problem because their earnings do not keep up with the rapidly increasing price of housing (Abidoye et al., 2021; Ministry of Tourism, 2018). Studies in the Indonesian context confirm that younger generations consistently face affordability barriers in accessing landed housing (Prativi, 2024; Rahadi et al., 2015). Similar patterns have been observed internationally, where affordability gaps constrain younger households' entry into housing markets (Kim, 2024; Subagyo et al., 2023)

To explain housing market behavior, researchers have applied various models. Hedonic pricing approaches are commonly used to evaluate the impact of location, design, and access to public facilities (Soltani et al., 2021; Wan et al., 2025). Marwal & Silva (2023) applies an agent-based model to simulate how households choose residential locations by minimizing housing and commuting costs under different affordability scenarios. Another study by Lai et al. (2023) uses a quantitative survey and applies Spearman correlation and ordinal regression to analyze how sociodemographic factors influence homebuyers' preferences. Meanwhile, spatial econometric techniques such as the Spatial Autoregressive Conditional Heteroscedasticity (SARCH) model account for locational effects on property valuation. Bourassa & Hoesli (2022) further highlight the role of automated valuation models in capturing complex market dynamics. Zhang & Miller (2025) uses an MDCEV model to analyze how developers choose locations and decide how much housing to build at each site. These methodological contributions underscore the relevance of locational and structural attributes in understanding property values, yet they largely address market-level pricing rather than preference misalignments between developers and consumers.

Several studies highlight the role of accessibility and livability in shaping housing choices. Schultheiss et al. (2024) and Grimes et al. (2024) stress the importance of proximity to workplaces, legal ownership, and public facilities in consumer decision-making. Similarly, environmental comfort and neighborhood quality emerge as crucial factors influencing consumer preferences (Diaz-Serrano, 2009) further explains that accessibility to employment centers and services is a fundamental driver of housing demand. Housing preference research increasingly emphasizes the role of heterogeneous consumer segments in shaping demand for sustainable and energy-efficient dwellings, as individuals differ in how they value cost, location, indoor quality, space, and environmental attributes when making residential choices (Choi et al., 2023; Gamal et al., 2023). These findings suggest that consumers consider both functional accessibility and social-environmental attributes, although developers may prioritize different factors.

Research across different contexts consistently reveals a misalignment between developer assumptions and consumer needs. Alasmari (2025) and Mulliner & Algrans (2018) found gaps in Saudi Arabia between attributes valued by developers and those prioritized by buyers. Kauko (2006) observed that consumers in the Netherlands prioritized functionality and spatial factors, while developers emphasized investment potential. Zamri et al. (2021) found that developers prioritize several factors when developing housing, including location, neighbourhood, and the financial capability of buyers. In Indonesia, younger buyers focus on affordability and flexible financial schemes (Prativi et al., 2024; Rahadi et al., 2015), whereas developers often prioritize profitability,

aesthetics, and design (Carmona et al., 2023; Mohd Aini et al., 2025). Furthermore, Tosa et al. (2025) distinguishes between 'stated' and 'revealed' preferences, noting that actual purchase decisions are often constrained by financial limitations and information asymmetry (Li & Wong, 2024). More recently, Pratama & Idajati (2022) found that Gen-Y and Gen-Z increasingly value lifestyle flexibility and smart home features, reflecting shifting consumer expectations in the post-pandemic era. Similar discrepancies have been identified in the UK, where developers' focus on profitability overlooked consumer demands for affordable and accessible housing (Carozzi et al., 2024).

Collectively, the literature indicates three persistent gaps. First, affordability remains a critical barrier for millennials, but developers continue to target mid- to high-end markets. Second, while consumers emphasize accessibility and neighborhood comfort, developers focus on location potential and aesthetics. Third, much of the existing research relies on price modeling or consumer surveys, with few studies directly comparing developer decision-making and millennial housing expectations in a single analytical framework. This study addresses these gaps by examining both developer strategies and millennial housing preferences within Yogyakarta's urban agglomeration, using a mixed-methods approach to identify points of divergence and potential strategies for aligning supply with demand. Accordingly, the present study specifically addresses how mismatches between supply and demand manifest in measurable terms and what strategic implications arise for urban housing governance in Yogyakarta.

Method

This study employed a mixed-methods approach, combining quantitative and qualitative techniques, to explore the preferences of property developers for constructing landed housing within the Yogyakarta Urban Agglomeration and to compare them to those of millennial consumers.

Research Design and Sampling

Although the number of developer respondents (n=54) may appear to be limited, the study focuses on active housing developers representing diverse scales (small, medium, and large enterprises) across the agglomeration. This purposive diversity ensures that the findings capture representative behavioral patterns rather than statistical generalization. Potential sampling bias was mitigated through multi-source triangulation and expert validation. Given the lack of an official record of the total number of active property developers in the region, the study relied on Israel (1992) sample size guidelines, which suggest that approximately 50 respondents are sufficient to achieve a 95% confidence level with a 10% margin of error in exploratory research (Shafaay et al., 2025). This benchmark provided a statistically acceptable minimum sample while ensuring feasibility in the field.

To further ensure relevance, purposive sampling was employed, targeting only developers who are actively engaged in constructing landed housing. This method was chosen because the research aims to compare developer supply-side strategies to millennial consumer preferences; hence, respondents with direct, recent experience in housing production were required. In the absence of a documented population frame, purposive sampling is particularly suited for studies that seek in-depth insights from practitioners most capable of answering the research question (i.e., identifying supply-demand misalignments). By focusing on experienced and active developers, the sample provides both statistical adequacy and contextual richness, enabling the study to capture meaningful contrasts between supply strategies and consumer expectations.

Quantitative Data Collection and Analysis

Quantitative data were collected through a structured questionnaire covering six domains: housing concept, building configuration, location accessibility, physical structure, ownership legality,

and geographical aspects. Key indicators included land and house size, housing type, number of floors, accessibility, road dimensions, legal ownership, and topography. Reliability testing produced a Cronbach's Alpha of 0.90, indicating high internal consistency.

The data analysis proceeded in three stages. First, Exploratory Factor Analysis (EFA) was used to identify latent constructs underlying housing attributes. Second, Pearson Correlation was applied to examine the strength and direction of linear relationships between key variables such as accessibility, infrastructure, and housing attributes. This model was selected because Pearson correlation is widely used in housing and real estate studies to capture pairwise relationships among quantitative variables, enabling researchers to identify which factors co-occur in shaping housing preferences (Matějková & Tichá, 2025; Zamri et al., 2021). For instance, accessibility is often correlated with infrastructure availability and neighborhood quality, both of which influence consumer satisfaction and property valuation (Diaz-Serrano, 2009). In the third stage, K-Means Clustering grouped developers according to their strategic orientations, offering a comparative perspective on supply-side practices. All statistical procedures were conducted using SPSS and Python to ensure robustness and replicability.

Quantitative Data Collection and Integration

The following statistical techniques were applied: Exploratory Factor Analysis (EFA), Pearson Correlation, and K-Means Clustering. EFA was used to identify latent constructs underlying the observed variables and to determine the primary factors influencing developer decision-making (Adachi, 2016; Oluleye et al., 2025;). Pearson Correlation was employed to assess the linear relationships among variables such as accessibility, infrastructure, and housing attributes. K-Means Clustering was applied to segment developers based on their preference patterns, allowing identification of distinct behavioral clusters (Sebastián & Severino, 2025; Hwang J & Lim, 2023). All quantitative analyses were performed using SPSS and Python.

To complement and contextualize the quantitative results, a phenomenological qualitative approach was employed. In-depth interviews with selected developers explored perceptions of millennial buyers, preferred price ranges, and sales dynamics. These insights were thematically coded and then compared against quantitative clusters. The integration strategy was triangulation: qualitative findings were used to explain statistical patterns, validate inconsistencies, and highlight consumer developer gaps.

Comparative Analysis

Finally, quantitative and qualitative results were mapped using Principal Component Analysis (PCA) and independent t-tests. This allowed for the identification of both convergences and divergences between developer strategies and millennial housing preferences, particularly in affordability, accessibility, and neighborhood comfort.

Results and Discussion

Statistical Profile of Developer Practices

Figure 1 shows that millennials represent 55.5% of housing consumers in the Yogyakarta Urban Agglomeration (Fatima et al., 2024). Development has shifted northward, with 41.8% of new housing in Ngaglik and 21.8% in Depok District. Most developers (55.5%) market units priced between IDR 500 million and 1 billion, with only 13% priced under IDR 500 million. This pattern underscores an affordability gap given the limited purchasing power of millennials. Developers' focus on medium to luxury houses reflects profit-driven strategies, leaving budget segments underserved.

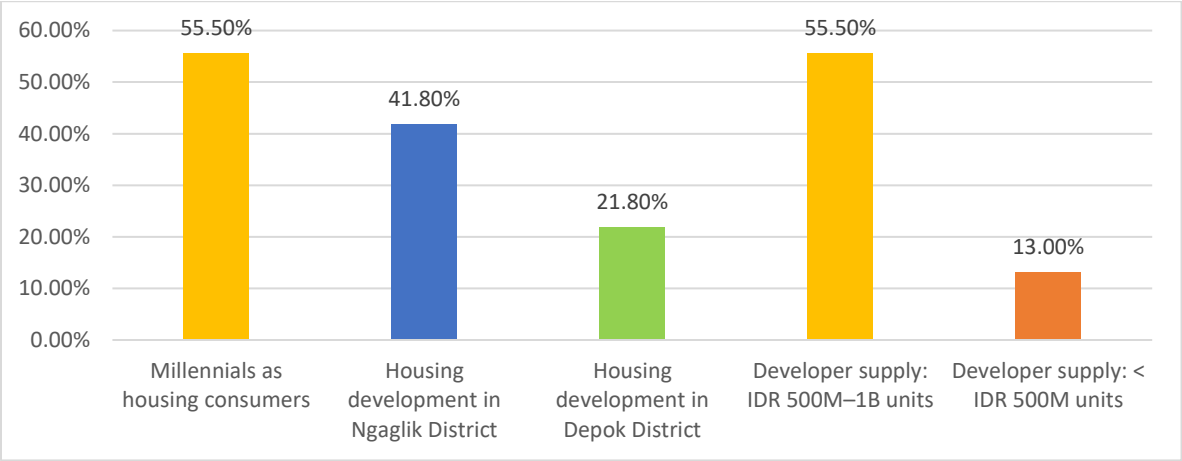

Fig. 1. Distribution of Housing Consumers and Developer Supply in Yogyakarta Urban Agglomeration

According to housing theory evolving in developed countries, the proximity to major highways, public services, and modes of transportation (stops/stations) is the most important factor in choosing a home. The results of research in the Yogyakarta Urban Agglomeration (see Figure 2), one of the regions in Indonesia, which is a developed country, show that 78% of developers build houses 100 to 500 meters from the main road, and 70% of developers build houses 300 to more than 500 meters from the main road. 95% of developers build houses 300 to more than 500 meters from transportation facilities in the form of bus stops. This finding suggests that the implementation of residential development in developing countries has not approached public facilities and transportation facilities, as mass transportation facilities in the Yogyakarta Urban Agglomeration have not been integrated into remote areas.

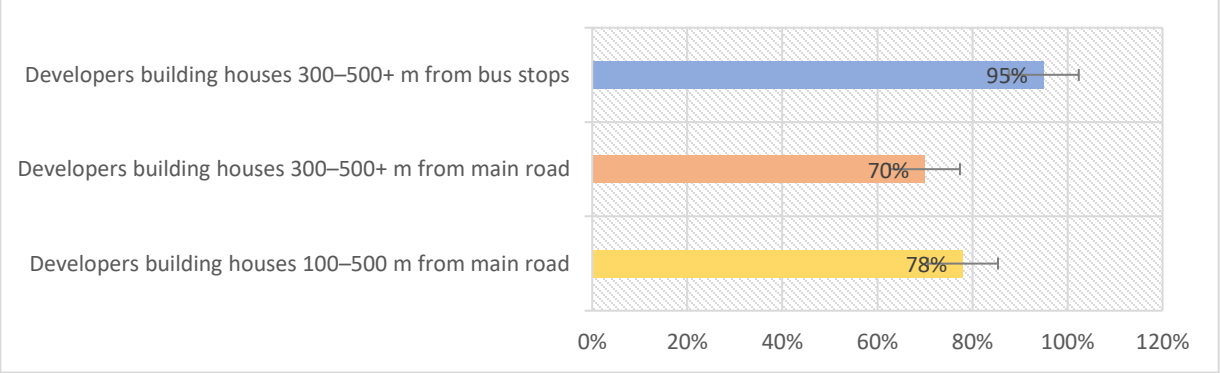

Fig. 2. Developer Housing Location Choices in Relation to Infrastructure

Exploratory Factor Analysis (EFA)

The second statistical analysis is Exploratory Factor Analysis (EFA). EFA is a complex statistical analysis tool that is commonly used in social-based research, along with SPSS/Python data processing tools (Finch, 2013). Exploratory factor analysis refers to the procedures for exploring factors underlying observed variables for cases without prior knowledge of what factors explain the variables (Adachi, 2016). Figure 3 depicts the result of an exploratory factor analysis regarding developer preferences in building landed houses in the Yogyakarta Urban Agglomeration. A positive and significant value (for example, 0.7 or higher) shows that the variable is closely related to that factor. Smaller positive values (0.3 to 0.6) indicate a fairly strong correlation with that factor.

Interpretation for factor sign loading, namely the sign (positive or negative) of the factor loading, provides information about whether the variable is positively or negatively related to that factor. This helps to identify and interpret these factors.

As shown in Figure 3, three factors dominate developer preferences: (1) land position, shape, and house type; (2) structural characteristics such as floors and rooms; and (3) road width. These priorities indicate that developers value flexibility for design and marketing rather than accessibility or affordability. This is consistent with Carozzi et al. (2024) findings, which show that developers emphasize investment potential over consumer needs.

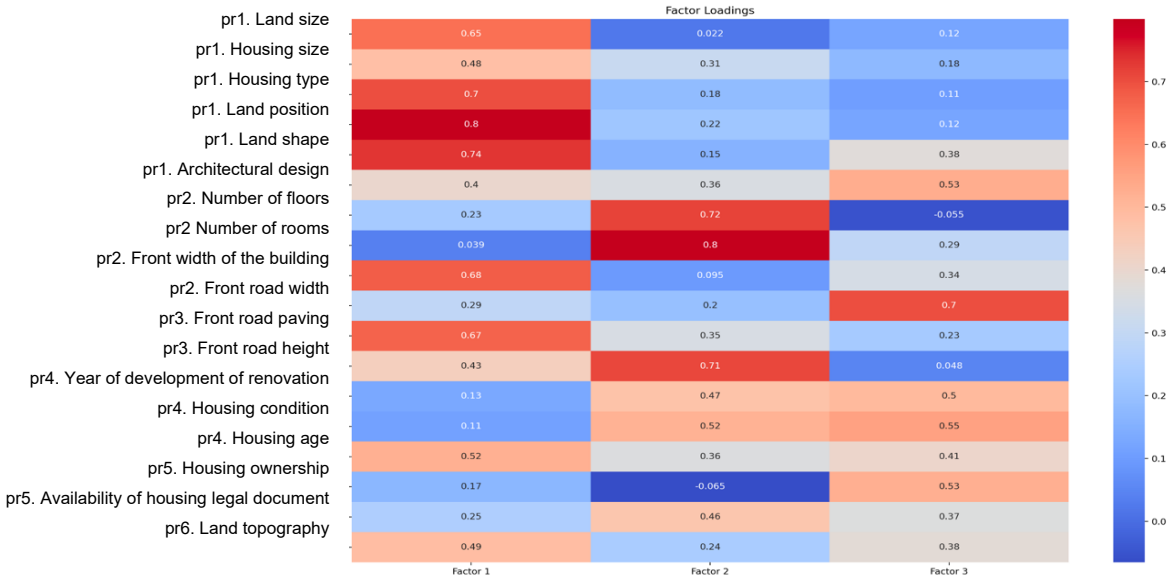

Fig 3. Factor Loadings of Exploratory Analysis

Qualitative Insights: Developer Perspectives

Phenomenological interviews confirmed the EFA findings and highlighted preferences for house types and pricing strategies. Developers noticed that type 45 houses priced under IDR 500 million were the most marketable, often selling within three months. In contrast, house type 120 encountered sales delays, with waiting times extending up to two years. Developers identified key deterrents for Gen-Y consumers, such as proximity to power lines, graveyards, rivers, and inadequate access roads. Desired attributes included modern architectural styles, safe environments, and proximity to public services—underscoring the importance of both design and contextual factors in consumer decision making.

Pearson Correlation Analysis

Pearson correlation analysis further elucidated four significant relational patterns. Figure 4 highlights four significant associations: public facilities with modern designs, worship with health facilities, education with retail, and location with scenic views. These relationships demonstrate how developers cluster services to enhance neighborhood attractiveness.

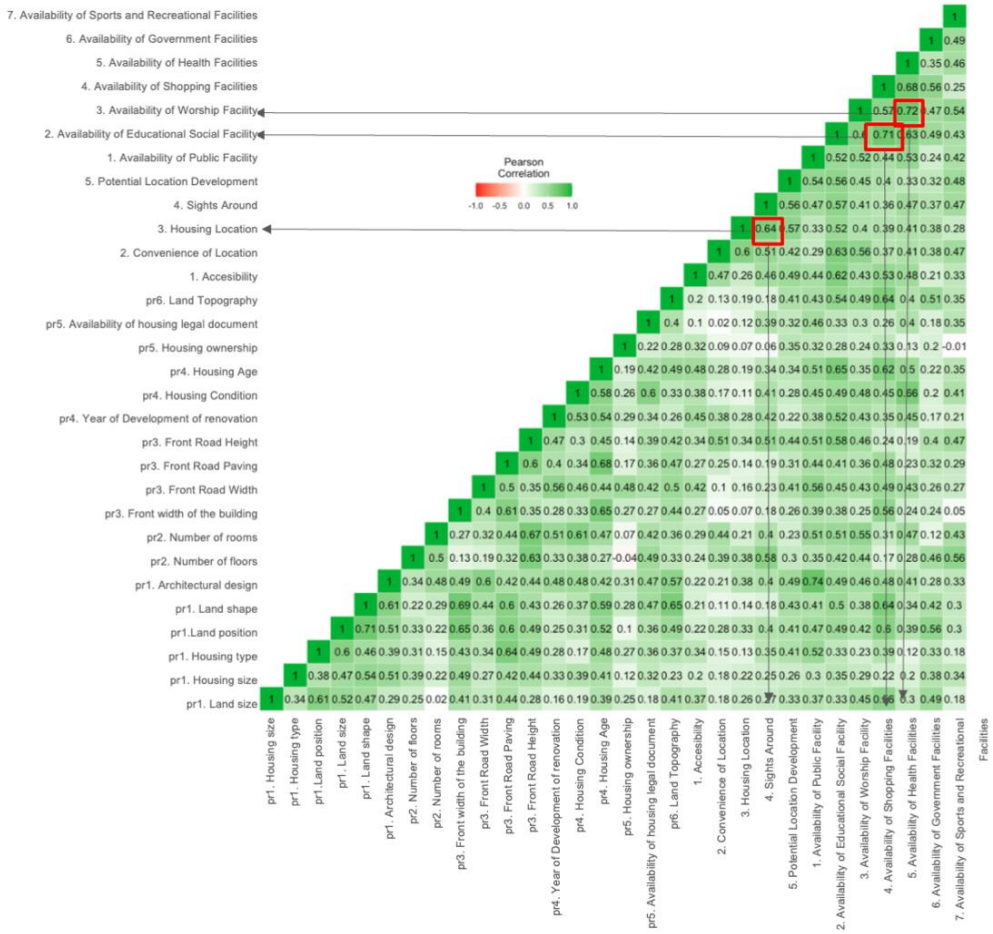

Fig. 4. The Result of Pearson Correlation Analysis

K-Means Clustering of Developer Types

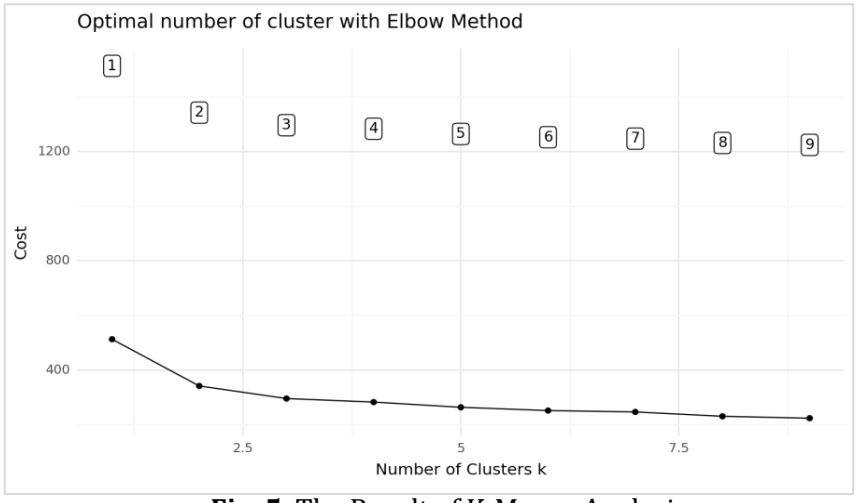

Fig. 5. The Result of K-Means Analysis

K-means clustering analysis revealed three distinct developer profiles: Cluster 1 balances size and type moderately, Cluster 2 emphasizes structural quality for upscale markets, and Cluster 3 takes an intermediate position. This diversity explains why affordable housing remains undersupplied despite evident demand (see Figure 5).

Comparative Analysis: Consumer vs. Developer Preferences

This section compares consumer (Gen-Y) and developer preferences regarding housing in the Yogyakarta Urban Agglomeration. Using a combination of factor mapping, Principal Component Analysis (PCA), and statistical testing, this analysis aims to identify where these two stakeholder groups align and diverge. To compare preferences meaningfully, consumer and developer factors were grouped (factor mapping) under broader conceptual categories as follows:

Table 1. Factor Mapping Result

Broad Category	Consumer Preference	Developer Preference
Accessibility & Location	House location, distance to main road, and workplace proximity	Accessibility, location comfort, and property location
Environmental & Scenic	Surrounding environment, scenic views	Scenic views, location development potential
Financial Considerations	House price, mortgage scheme, down payment, and instalment	House price range (general)

Based on the Principal Component Analysis (PCA), two main components emerged for consumers. PC1 is shaped by location, environmental quality, and accessibility, all of which have strong negative loadings, indicating that these attributes account for the largest variance in consumer preferences. PC2 is dominated by house price (-0.87), suggesting that affordability operates as a distinct but critical consideration. Together, these findings demonstrate that consumers treat housing price as a trade-off against locational and environmental attributes. In economic terms, millennials with limited purchasing power are forced to balance affordability with proximity to jobs, public facilities, and a livable neighbourhood, an outcome consistent with theories of constrained household choice (Abidoye et al., 2021).

For developers, PCA reveals a different orientation. PC1 is driven by location, accessibility, scenic view, and long-term development potential, reflecting a strategy to maximize future asset appreciation. PC2 is dominated by house price (+0.92), showing that developers also treat price as an independent strategic dimension rather than as a trade-off with quality or accessibility. This reflects a supply-side logic where housing is positioned as an investment asset, aligning with findings by Kauko (2006) in the Netherlands and Alasmari (2025) and Mulliner & Algrans (2018) in Saudi Arabia, who observed that developers/investor prioritize profitability and location branding over affordability.

The independent t-test results reinforce these contrasts: significant gaps were found in how consumers and developers evaluate direct road access, environmental comfort, and affordability thresholds. Economically, this divergence explains why, while being Yogyakarta's most rapid growth pole, Sleman continues to struggle with affordability. Developers profit from speculative land value increases, but millennials suffer from stagnating salaries (average IDR 2.36 million/month; Ministry of Tourism, 2018), limiting their access to the products supplied.

These results not only quantify the divergence but also underscore a structural imbalance in the housing market: consumers are demand-constrained by affordability, while developers are supply-driven by profitability and long-term asset value. Similar mismatches have been documented in international contexts (Kim et al., 2023; Marshall & Zhang, 2025; Teklemariam et al., 2025),

highlighting the need for policy instruments such as inclusionary zoning, targeted subsidies, and credit facilitation to bridge the supply-demand gap in urban agglomerations.

Table 2 illustrates the most striking divergences. Consumers strongly value direct road access and neighborhood comfort, while developers focus on general accessibility and future development potential. Both groups, however, agree on the importance of workplace proximity. These contradictions, "location comfort" for developers versus "direct access" for consumers, highlight differing interpretations of desirability. Similar mismatches have been reported in Jakarta (Rahadi et al., 2015) and Saudi Arabia (Alasmari, 2025; Mulliner & Algrans, 2018). The analysis reveals a clear preference mismatch between Gen-Y consumers and developers. Developers should consider integrating affordability and proximity into their housing designs to better serve millennial needs. For regulators, promoting land availability near essential public facilities and incentivizing affordable housing development may help bridge this gap.

Table 2. Statistical Analysis t-test Result

Consumer Factor	Develop Factor	t - stat	p – value	Sig.	Interpretation
House location	Property location	4.902	0.000006	Yes	Developers and consumers emphasize different aspects.
Distance to main road	Accessibility	-3.819	0.000205	Yes	Consumers prefer direct road access more strongly
Distance to workplace	Location comfort	-0.808	0.420424	No	Both value this similarly
Surrounding environment	Scenic view	5.112	0.000002	Yes	Developers focus more on visuals; consumers on comfort.
Scenic view	Development potential	-1.797	0.075192	No	No significant difference in importance.

Overall, the results reveal a structural misalignment. Developers emphasize profitability, design, and spatial potential, while millennials prioritize affordability, accessibility, and livability. The evidence suggests that without policy intervention and adaptive developer strategies, the housing market will continue to underserve younger buyers. Integrating affordability thresholds, ensuring proximity to essential facilities, and prioritizing safe and comfortable environments are crucial steps forward, echoing findings from Diaz-Serrano (2009) and Prativi et al. (2024). These findings imply that urban housing policies should integrate fiscal instruments such as tax relief for affordable housing developers, inclusionary zoning, and credit-linked subsidies to rebalance the market structure and ensure inclusivity within the Yogyakarta urban region.

Conclusion

This study reveals a substantial divergence between property developers' strategies and millennial (Gen-Y) housing preferences within the Yogyakarta Urban Agglomeration, offering new empirical evidence on how supply-side priorities and demand-side expectations interact in emerging urban markets. While millennials dominate the housing consumer base, their emphasis on affordability, accessibility, and environmental comfort contrasts sharply with developers' focus on profitability, structural attributes, and locational potential. By integrating quantitative and qualitative analyses, this research contributes to the broader housing studies literature by introducing a comparative framework that links developer decision-making and consumer behavior,

thereby expanding the understanding of preference misalignment in urban housing provision. The findings underscore the need for more responsive housing policies that integrate affordability thresholds, spatial incentives, and inclusionary zoning to ensure equitable access to livable housing for younger generations. For developers, the results emphasize the necessity of adopting adaptive design and pricing strategies that balance profitability with long-term market sustainability, particularly through projects that combine affordability, proximity to essential services, and neighborhood comfort. Overall, this study strengthens the discourse on sustainable urban development by providing actionable insights for aligning housing supply with the evolving expectations of millennial consumers and by outlining policy pathways toward a more inclusive and resilient housing market.

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Declarations

Author contribution : The research project was led and coordinated by the first author, who was responsible for conceptualizing the study, overseeing data analysis, and drafting the manuscript. The second and third authors contributed to the development of the research instrument and conducted field data collection. The fourth author was involved in data transcription, processing, and validation. The fifth author provided critical input during the statistical analysis and contributed to the literature synthesis. All authors revised the manuscript collaboratively and approved the final version for publication.

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Ethics declaration : This research has complied with the ethical standards of academic research as stipulated by the authors' affiliated institutions. Permission was obtained from relevant parties before data collection, and all participants provided informed consent before participating in surveys and interviews.

Additional information We, the authors, acknowledge that this work has been conducted and written based on ethical research principles in accordance with the regulations of our respective universities. We have

secured the necessary permissions from the institutions and stakeholders involved in the data collection process.

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