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Article

The Regional Impact of Nanjing Urban Rail Network Accessibility on Residential Property Purchase Intention

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Abstract: This study examines the regional impact of Nanjing's urban rail network accessibility on residential property purchase intention, highlighting the interplay between transportation infrastructure and real estate dynamics. As urban rail networks enhance connectivity, they are expected to influence buyer behavior and property values. The research explores how factors such as environmental quality, market conditions, and psychological influences shape purchase intentions among potential buyers. By analyzing data from various neighborhoods affected by the urban rail system, the findings reveal a significant positive correlation between accessibility and property purchase intention, with buyers increasingly valuing sustainable living environments. This study contributes to the understanding of the role of transportation infrastructure in urban development and its impact on residential real estate markets, drawing on insights gathered from a sample of 390 participants in the Nanjing area.

Keywords: Regional Impact, Residential Property Purchase Intention, Urban Rail Network Accessibility.

1. Introduction

The research on the regional impact of accessibility to Nanjing's urban rail transit network on residential home purchase intention stems from the increasingly important role of urban rail transit systems in shaping urban development patterns and real estate markets [1] As Nanjing's urban rail transit network continues to expand, it presents a unique opportunity to examine how improved accessibility influences the preferences and investment decisions of homebuyers in various urban areas. This study is based on the observation that proximity to railway stations is generally associated with rising housing prices and changes in residential demand [2] However, it also raises concerns about affordability, social equity, and spatial differences in urban growth. The research combines urban planning, transportation geog-raphy, and real estate economics to understand the complex interac-tions between transportation infrastructure and real estate market dynamics. In addition, this study fills a gap in existing research on the local impact of transportation accessibility on home purchase inten-tion, especially in the context of a rapidly developing Chinese city like Nanjing, where rapid urbanization and infrastructure investment are changing residential patterns and socioeconomic structures[3] The re-gional impact of Nanjing's urban rail transit network on residential property purchase intention involves multiple interrelated factors. As the urban rail transit network expands, the accessibility of various areas in the city has significantly improved, making previously less desirable areas more attractive to potential homebuyers.

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Since residents gener-ally prefer areas with convenient public transportation, this increase in accessibility can lead to higher housing prices in areas covered by the rail transit network [4]

Research Objectives

This research examines the regional impact of Nanjing urban rail net-work accessibility on residential property purchase intention with the following objectives:

1. To examine the influencing mechanisms of enhancing the residential property purchase intention based on the impact of urban rail network accessibility, with the variables of psychological and social influence, environmental factors, and market conditions.
2. To offer suggestions for the residential property of the Nanjing urban rail network accessibility by enhancing buyers' satisfaction through economic and market value.

2. Literature Review

Definition of Accessibility Theory on Urban Rail Network Im-pacting Property Purchase Intention

Accessibility Theory suggests that the ease with which individuals can reach various destinations plays a crucial role in shaping their decisions, especially in the realm of urban living [5]. When this theory is applied to urban rail networks, it highlights how enhanced access to transportation options can significantly boost the appeal of residential properties. As urban rail networks become more user-friendly and widespread, they effectively reduce travel times and elevate the convenience levels for residents. This transformation makes neighborhoods located near these rail lines far more attractive for prospective homebuyers. Individuals are increasingly drawn to areas with superior rail connectivity since it aligns with their growing need for efficient mobility and easy access to em-ployment opportunities, essential services, and recreational amenities. This increased intention to purchase homes in well-connected areas underscores the profound implications that transportation infrastruc-ture has on urban development and the dynamics of real estate markets. As such, the interaction between rail accessibility and residential de-sirability not only shapes individual choices but also drives broader patterns of urban growth and economic vitality [6]

Definition of Urban Economic Theory on Urban Transportation Accessibility

Urban Economic Theory examines how urban infrastructure, particu-larly rail networks, influences local economic dynamics [7] Specifically, it highlights the impact of urban rail accessibility on the intention to purchase residential properties. The theory suggests that both the availability and quality of transportation infrastructure can significantly drive economic activity within a given area. Enhanced rail access not only facilitates commuting but also connects residents to jobs, services, and amenities, thereby increasing the attractiveness of residential properties. As commuting becomes more convenient and opportunities more accessible, neighborhoods see a rise in desirability, which in turn boosts property values and increases the likelihood of home purchases. The relationship between transportation infrastructure and economic development underscores the significant impact of urban rail networks on shaping residential preferences and the real estate market [8]

Definition of Term

Property purchase intention relating to transportation accessibility re-fers to the likelihood that potential buyers will decide to invest in a property based on the ease of access to transportation options. Various factors, including the perceived convenience and efficiency of public transport systems, road networks, and pedestrian pathways, shape this intention. Buyers often prioritize locations that offer good connectivity to essential services, workplaces, and recreational areas, viewing these attributes as enhancing their quality of life. Transportation accessibility can significantly influence buyers' perceptions of a property's value, as locations with robust transport links tend to be more desirable [9]

Psychological and social influences play a significant role in shaping individuals' intentions to purchase property, particularly concerning transportation accessibility. Psychological factors encompass personal perceptions, beliefs, and attitudes toward the convenience and desira-bility of living in areas with good transportation links. For instance, individuals may feel more inclined to buy property in locations that offer easy access to public transport, as this aligns with their values around mobility, time efficiency, and overall lifestyle preferences [10]

Environmental factors significantly influence property purchase inten-tions, particularly regarding transportation accessibility. These factors encompass a range of elements in the physical environment that affect how potential buyers perceive the desirability and practicality of a lo-cation. Key elements include the availability and quality of transporta-tion infrastructure, such as public transit systems, road networks, and pedestrian pathways. Well-maintained and efficient transportation op-tions enhance a property's appeal, as they promise ease of movement and accessibility to essential services and amenities. Additionally, the surrounding natural environment plays a role; areas with green spaces, parks, and scenic views are often more attractive to buyers who priori-tize lifestyle quality [11]

Market conditions impacting property purchase intentions related to transportation accessibility refer to the various economic and envi-ronmental factors that influence potential buyers' decisions based on the availability and quality of transportation options. These conditions include fluctuations in property prices, interest rates, and overall de-mand for housing in specific areas. In a strong market, with high de-mand for properties in well-connected locations, buyers may feel more compelled to act quickly to secure a property that offers good trans-portation access. Conversely, in a weaker market, buyers may be more cautious and selective, weighing the value of transportation accessibil-ity against other factors such as price and property features.[12]

Conceptual Framework

The impact of psychological, social, environmental, and market factors on property purchase intentions can be analyzed through the accessi-bility of Nanjing's urban rail network. Psychological influences refer to how individual perceptions and attitudes towards public transportation accessibility shape buyers' intentions. In Nanjing, potential homeown-ers often prioritize properties located near urban rail stations due to the perceived convenience, reduced commuting stress, and improved qual-ity of life that these locations offer [13] Social influences also play a sig-nificant role, as community norms and peer opinions greatly affect property choices. In a region that values accessibility to the urban rail network, buyers may feel encouraged to conform to social expectations, which can increase their intention to

purchase properties that meet these criteria [14] Environmental factors include the physical charac-teristics of the areas surrounding the rail network. Features such as high air quality, green spaces, and well-designed urban planning enhance the appeal of neighborhoods near rail stations [15]These attributes contribute to a better overall living experience, making properties in these areas more desirable. Market conditions significantly influence purchase intentions by shaping the economic landscape for buyers. Changes in interest rates, housing supply, and demand affect percep-tions of the value of urban rail access. In a strong market, properties near the rail network may command higher prices, whereas in a weaker market, buyers may weigh transportation accessibility more carefully against other factors [16].

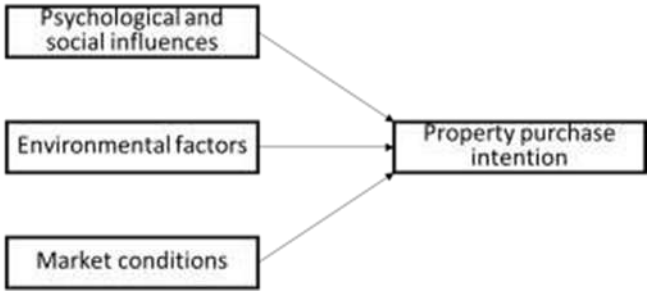

Figure 1. The Conceptual Framework

Research Restriction

One significant limitation is the lack of comprehensive data on property transactions and buyer demographics, which can hinder the analysis of trends and correlations. Additionally, variations in personal preferences and socio-economic factors among potential buyers can complicate the interpretation of results, making it challenging to generalize findings across different segments of the population. Another restriction may arise from the dynamic nature of real estate markets, where rapid changes in economic conditions, government policies, and urban development can influence buyer intentions in unexpected ways. Furthermore, external factors such as cultural differences and varying levels of public transportation acceptance may affect the study's relevance to other regions or cities. The research may also be constrained by its geographical focus, as findings specific to Nanjing might not be applicable in different urban contexts, limiting the transferability of insights.

Research Hypothesis

The Setting of Correlation between Psychological and Social Influences and Residential Property Purchase Intention

The hypothesis suggests that increased accessibility to Nanjing's urban rail network positively impacts the psychological perceptions and social influences of potential buyers, thereby boosting their intention to purchase residential properties. As proximity to the rail network increases, buyers are expected to perceive greater convenience, reduced commuting stress, and improved lifestyle quality, leading to a more favorable attitude toward buying properties in those areas. Furthermore, social factors such as community expectations and peer opinions about the desirability of living near accessible transportation are expected to further reinforce this intention. In summary, the combined effects of psychological motivations and social validation are expected to significantly enhance property purchase intentions in areas with better urban rail accessibility [17]

There is no positive correlation between psychological and social influences, and Nanjing residential property purchase intention under the urban rail network accessibility.

The Setting of Correlation between Environmental Factors and Residential Property Purchase Intention

The proposed hypothesis for the correlation between environmental factors and the intention to purchase property, particularly about the accessibility of Nanjing's urban rail network, suggests that favorable environmental conditions will significantly enhance the likelihood of buying residential properties near the metropolitan rail system. It is expected that factors such as air quality, availability of green spaces, and overall aesthetic appeal will positively influence buyers' perceptions of desirability in these areas. As accessibility to the

urban rail network improves, properties in environmentally attractive locations are anticipated to be perceived as more valuable, leading to a higher likelihood of purchase. Furthermore, the hypothesis posits that buyers will prioritize properties that not only offer convenient transportation options but also align with their values regarding sustainability and quality of life. This, in turn, reinforces the positive correlation between environmental factors and the intention to purchase property [18]

H2 There is no positive correlation between environmental factors and Nanjing residential property purchase intention under the urban rail network accessibility.

The Setting of Correlation between Market Conditions and Residential Property Purchase Intention

The proposed hypothesis examines the relationship between market conditions and the intention to purchase property, with a particular focus on the influence of accessibility to Nanjing's urban rail network. It suggests that favorable market conditions will increase the demand for residential properties located near this transportation system. Specifically, when economic indicators such as low interest rates, high employment rates, and strong housing demand coincide with improved access to the urban rail network, potential buyers are likely to show a greater willingness to invest in these properties. Additionally, the hypothesis posits that in a strong market, the perceived value of properties close to the rail network will rise, further boosting purchase intentions. In contrast, during weaker market conditions, while the intention to buy may decrease, the appeal of being near the urban rail network will remain an essential factor in influencing buyer decisions. Overall, the hypothesis suggests that market conditions interact with the advantages of transportation accessibility to significantly influence property purchase intentions [19]

H3 There is no positive correlation between market conditions and Nanjing residential property purchase intention under toshe urban rail network accessibility.

3. Proposed Method

Population and Sample

This research population of Gen Z was selected in Guangzhou, China, and participated in apparel purchase behavior through social media. A sample of 392 was collected for this study's analysis in March 2025 through the WeChat Survey Platform.

This study's minimum research sample size is based on the study of Kadam Bhalerao (2010)

1. The margin of error (confidence interval) – 95%
2. Standard deviation 0.5
3. 95% - Z Score = 1.96
4. Sample size formula = (Z-score) ^{2} * Std Dev*(1-StdDev) / (margin of error) ^{2}
5. (1.96) ^{2} x 0.5(0.5) / (0.05) ^{2}
6. (3.8416 x 0.25) / 0.0025
7. 0.9604 / 0.0025 = 384
8. 384 respondents would be needed for this study based on a confidence level of 95%

Research Model Correlation Analysis

Correlation analysis is widely used to measure the degree of asso-ciation between different variables. The Pearson correlation coefficient is commonly used to test the correlation. The value of the correlation co-efficient (r) indicates the strength of the correlation between variables, while the significance level of the correlation is shown in the P-value.

4. Results and Discussion

Correlation Analysis of Psychological and Social Influences, and Residential Property Purchase Intention

The correlation coefficient r between psychological and social in-fluences and residential property purchase intention is 0.783, and the p-value (P) is 0.000, which is less than 0.01. Thus,psychological and social influences significantly correlate with the property purchase in-tention.

Correlation Analysis of Environmental Factors and Res-idential Property Purchase Intention

The correlation coefficient r between environmental fac-tors and property purchase intention is 0.802, and the p-value (P) is 0.000, which is less than 0.01. Thus, environmental factors significantly correlate with property purchase intention.

Correlation Analysis of Market Conditions and Property Pur-chase Intention

The correlation coefficient r between market conditions and property purchase intention is 0.772, and the p-value (P) is 0.000, which is less than 0.01. Thus, market conditions significantly correlate with property purchase intention.

5. Conclusions

The study examines the influence of various independent variables—namely, psychological and social influences, environmental factors, and market conditions—on the intention to purchase property in Nanjing, with a particular focus on the impact of urban rail network accessibility.

Firstly, findings indicate that psychological and social influences show a significant role in shaping property purchase intentions. Buyers' perceptions of convenience and adherence to social norms regarding urban rail access are likely to enhance their inclination to invest in properties located nearby[20].

Secondly, environmental factors are also expected to correlate positively with purchase intentions. Attributes such as transportation convenience, clean air, green spaces, and overall aesthetic appeal are highly valued by buyers, which increases their interest in acquiring properties in locations that are easily accessible [21]

Lastly, market conditions are expected to have a positive correlation with property purchase intentions. Favorable economic indicators, including low interest rates and high demand for housing, are likely to make properties situated near the urban rail network more attractive to potential buyers [22]

H1 There is a positive correlation between psychological and social influences, and Nanjing residential property purchase intention under the urban rail network accessibility.

H2 There is a positive correlation between environmental factors and Nanjing residential property purchase intention under the urban rail network accessibility

H3 There is a positive correlation between market conditions and Nanjing residential property purchase intention under the urban rail network accessibility.

Managerial Implications

The managerial implications of Nanjing's urban rail network accessibility on residential property purchase intentions highlight the necessity for a refined property development strategy. Developers should prioritize identifying and acquiring land parcels

near rail stations, as these locations are likely to experience higher demand and increased property values. By integrating accessibility into the development plan, they can enhance the marketability of residential projects. Furthermore, incorporating sustainable design elements and environmental considerations into developments can attract buyers who value quality of life and eco-friendly living. This approach aligns with consumer preferences and can set a project apart in a competitive market. In addition, marketing strategies should emphasize the convenience and lifestyle benefits of living near the urban rail network. Effective branding that communicates the advantages of accessibility—such as reduced commuting times and improved connectivity—can resonate with potential buyers and positively impact their purchase intentions. Ultimately, it is essential to stay attuned to market conditions and adjust development strategies accordingly. By understanding the economic landscape and buyer behavior, managers can make informed decisions that optimize the success of residential projects related to urban rail network accessibility. Overall, a strategic focus on accessibility can significantly influence property development outcomes and enhance buyer engagement [23].

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