QUALITATIVE RESEARCH JOURNAL FOR SOCIAL STUDIES
ISSN Online: 3006-4686, ISSN Print: 3006-4678
Volume No: 02 Issue No: 04 (2025)

DETERMINANTS OF RESIDENTIAL LOCATION CHOICE IN THE TRI-CITIES OF SINDH

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Abstract
Rapid urbanization in Pakistan's Sindh province has intensified competition for residential spaces in interconnected urban clusters like Hyderabad, Kotri, and Jamshoro. This study explores the socio-economic and environmental factors influencing residents' location choices within these tri-cities, employing a quantitative survey of 350 households. Using multinomial logistic regression and ordinary least squares (OLS) models, the analysis identifies accessibility to services ($\beta = 0.804$, $p < 0.001$) and green spaces ($\beta = 0.663$, $p < 0.001$) as the strongest predictors of location preference scores, surpassing proximity to employment and pollution concerns. Descriptive profiles reveal that 45% of respondents prefer Hyderabad for its economic vibrancy, despite higher pollution levels (mean = 6.2/10). Comparative insights highlight Kotri's appeal for affordability amid industrial growth, while Jamshoro attracts education-oriented families. Findings align with Alonso's bid-rent theory, adapted to developing contexts, and address gaps in mid-sized South Asian urban dynamics. Policy implications include zoning reforms to enhance green infrastructure and equitable access, fostering sustainable development. Limitations encompass self-reported biases and exclusion of transient migrants. This research advances urban planning discourse by quantifying predictors in a polycentric tri-city framework.

Keywords: *Residential location choice, socio-economic determinants, environmental factors, tri-cities, Sindh, bid-rent theory, urban planning*

I. Introduction

Sindh province, Pakistan's second-most populous region, exemplifies the dual-edged sword of urbanization: economic vitality juxtaposed against spatial inequities. Urban growth has transformed Sindh into a dynamic yet challenging space for residential settlement, where the pressure on land, housing, and infrastructure has intensified over the past decades. As of 2025, Sindh's urban population exceeds 55 million, with an annual growth rate of 2.57%—the highest in the country—primarily driven by rural-to-urban migration and natural population increase

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(Lookadoo & Bell, 2020). This rapid demographic shift has created both opportunities and challenges for policymakers, planners, and residents, as cities struggle to accommodate expanding populations while maintaining quality of life, sustainability, and accessibility.

Within this broader urban context, the tri-cities of Hyderabad, Kotri, and Jamshoro constitute a vital economic corridor in Sindh, collectively housing over 2.8 million residents and contributing approximately 18% to the provincial GDP through sectors such as textiles, manufacturing, trade, and higher education. These cities exhibit distinct yet interconnected urban patterns: Hyderabad serves as the historic economic core, Kotri functions primarily as an industrial satellite, and Jamshoro has evolved into an education-centric hub, largely shaped by its universities and research institutions. Collectively, they represent a polycentric urban cluster where residential preferences are influenced by a combination of socio-economic, environmental, and infrastructural factors (Mairaj et al., 2025).

Residential preferences in these cities mirror broader South Asian urban trends, in which households negotiate among affordability, accessibility, and quality-of-life considerations, often under conditions of constrained land availability (Noureen et al., 2022). In Hyderabad, residents often prefer central neighborhoods due to proximity to commercial, administrative, and social services, despite experiencing high levels of congestion, noise, and pollution. Kotri, being a smaller industrial city, attracts households with limited financial resources who prioritize affordability and proximity to employment in factories or industrial complexes. In contrast, Jamshoro's identity as an educational and research hub draws families who place high value on educational opportunities and greener, less densely built-up surroundings. These residential choices, while reflecting individual priorities, collectively shape the urban morphology, influencing patterns of sprawl, land-use distribution, and demand for public services (Osman & Abebe, 2023).

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Recent surveys highlight that a majority of Sindh's urban population (62%) prioritize accessibility and transport links when choosing residential locations, followed by environmental quality (48%) and housing costs aligned with household income (UN-Habitat, 2023). Nevertheless, preferences differ markedly among social groups: higher-income households, earning more than PKR 50,000 per month, often prefer Jamshoro's suburban zones for serenity and greener surroundings, whereas lower-income groups gravitate toward Kotri's peri-urban fringes where rents are lower but industrial activity is higher. This heterogeneity in residential choice underscores the importance of nuanced, localized research, as indiscriminate urban growth can exacerbate inequalities and spatial segregation—Hyderabad's informal settlements, for instance, now shelter roughly 35% of its population (Rahmat et al., 2023), highlighting a pressing challenge for inclusive urban planning.

The rapid expansion of the tri-cities such as Hyderabad growing at 3.1% annually, Kotri at 2.8%, and Jamshoro at 2.4%—has intensified pressures on residential markets, yet the determinants of household location choice remain underexplored (Pakistan Economic Survey, 2025). Core questions arise regarding how socio-economic variables, such as household income and proximity to employment, interact with environmental considerations, including pollution levels, availability of green spaces, and neighborhood safety, to shape residential decisions. For instance, why do nearly 40% of migrants choose to settle in Hyderabad despite its high air pollution levels, with an average Air Quality Index (AQI) of 180—considered hazardous by the Pakistan Environmental Protection Agency (Pak-EPA, 2024) Similarly, why does Kotri's industrial pollution deter roughly 25% of potential residents (Rana et al., 2024).

Existing evidence remains fragmented. National-level studies often aggregate urban Pakistan, masking the unique characteristics of mid-sized city clusters such as the tri-cities (Ahmad & Anjum, 2018). Locally, outdated census data fail to account for population shifts resulting from the 2022 floods, which displaced approximately 150,000 individuals to peri-urban areas (Federal Flood Commission, 2023). Without detailed insights into these determinants, planners risk implementing interventions that fail to match actual residential needs and preferences, potentially perpetuating inequities—for example, Jamshoro maintains green coverage of only 12% compared to Hyderabad's 4%, illustrating stark contrasts in urban livability (UN-Habitat, 2023).

This study aims to address these gaps by pursuing three interrelated objectives:

1. Profile residential preferences and socio-environmental characteristics across Hyderabad, Kotri, and Jamshoro.
2. Quantify major socio-economic and environmental factors—such as income, proximity to work, accessibility, pollution levels, and green spaces—using regression techniques to determine the strength of each predictor.

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3. Compare the relative influences of these factors across the tri-cities to generate tailored insights for urban policy and planning.

These goals place residential location decision as a utility maximizing one where households make trade-offs to attain optimal living conditions. The survey related data, with statistical modelling, give a strong empirical foundation of identifying the choice drivers and evidence-based policy interventions.

Theoretically, the study builds on classical location theories, such as the bid-rent model by Alonso to the context of the mid-sized cities in the South Asia region, changing, tailoring it to reflect climate vulnerabilities, informal housing sector, and socio-economic heterogeneity (Rauf & Zaidi, 2024). In practice, the results can endorse the Urban Policy Framework by Sindh (2021) because it promotes changes in zoning policies that combine green corridors, convenient transportation, and affordable housing, which may decrease spatial segregation by up to 20% (Raut et al., 2020). These insights can be used by policymakers and other stakeholders, such as the Sindh Building Control Authority, to make informed decisions, such as making Kotri more walkable to keep middle-income families or enhancing the green peripheral infrastructure in Jamshoro to meet demand. This research fits into the research strategies of inclusive urban development in a country where half of people living in urban areas experience housing stress, one of the Sustainable Development Goals of sustainable cities and communities (United Nations, 2023).

II. Literature Review

The location theory has been a fundamental approach in explaining residential choice behavior by determining that land allocation and use represent a decision by households to trade off transport costs, accessibility and total utility associated with a wide range of locational features. The most important element of this framework is the bid-rent model developed by Alonso (1964), which continues to be essential in the research of urban economics and planning. The model also suggests that households compete by paying rents to minimize the cost of commuting, which would produce a predictable gradient of land prices in that high rent cores will generally be occupied by high-income households with strong preferences in location and low-income households will be in the outer areas where the costs of rent and accessibility will be more beneficial. This model is based on the classical agricultural land-use rings of von Thunen and it assumes the monocentric urban structure, making the analysis of the model easy, as only one central business district (CBD) is considered.

The monocentric assumption is however challenged by the mid-sized polycentric cities like the tri-cities of Hyderabad, Kotri and Jamshoro in the Sindh. These urban agglomerations are seen to have several economic, industrial, and educational activity centers, the historical market places of Hyderabad, an industrial center like Kotri, and research institutions and universities, that breaks bid-rent gradients and forms intricate residential patterns (Vali et al., 2020). In polycentric settings, households tend to trade-off between distance and commuting expenses, as well as, between more than two centers with different opportunities and services. An example is that the family might prefer to be near an industrial place of work in Kotri than educational institutions in Jamshoro or the other way round depending on household strength, income, and personal preferences.

In third world nations, other complications come in. Traditional bid-rent patterns may be undermined by informal housing markets, unequal income distribution and state subsidies, stimulating the peripheral sprawl and producing heterogeneous urban landscapes (Mendiratta &

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Sidana, 2025). Empirical studies in India further indicate that distance to CBDs accounts about 55% of the rent variance in the urban setting, meaning the centrality of transport-cost-based bidding but also signifying the's deviations in the informal and semi-formal housing setting (Medeiros & van der Zwet, 2020). These results highlight the necessity to modify classical models using them to South Asian mid-sized cities where polycentric organizations, informal settlements, and inequalities in infrastructure make residential choice difficult.

Environmental determinism is viewed as a complement to the location theory because it focuses on the natural and ecological factors that influence residential preferences without factoring in the purely economic factors. As an example, the hilly and greener parts of jamshoro attract those families that would like to enjoy the health benefits, recreational facilities, and scenery, where there is a preference of environmental quality due to affordability and accessibility (Mendiratta & Sidana, 2025). The integrated frameworks are socio-economic bidding and environmental determinism, based on the idea that household's trade-off between income, accessibility, pollution and the availability of green space, and empirical research demonstrates that it is possible to quantify the premiums of low-pollution location. One of the studies ensured that the economic effect of ecological amenities is very real because the properties in areas with high environmental quality can achieve a production value that is 10 percent higher in rent rates (Osman & Abebe, 2023).

The South Asian applications of the frameworks provide some significant regional peculiarities. As an example, in Lahore, the subsidized public transit level equalizes the bid-rent gradients giving the low-income households an improved access to the central city districts and increasing the relative significance of the environmental variables in residential choices (Rana et al., 2024). On the other hand, in low-lying areas like Dhaka, residents tend to vacate low-lying vulnerable regions, and surveys have shown that 3 out of 100 people tend to choose high-altitude or safe locations even though the rent is higher, which is the interaction between environmental determinism and socio-economic decision making (World Bank, 2022). These results highlight that the classical location theories should consider the risks of climate and other contextual variables in the developing nations.

In South Asia, the residential location is still dominated by socio-economic determinants. The income of households is a major predictor, as higher-income households have positive correlation that indicates that they prefer centrally located neighborhoods because of their capacity to pay high rents and convenience due to accessibility to places of work and services. The practical relevance of accessibility in Pakistan is that 68 percent of the urban population are more interested in their closeness to workplaces or schools which has decreased their average commuting time by 15minutes (Rahmat et al., 2023). The concept of accessibility goes beyond the proximity to include the quality of the transport network, the road network, and the accessibility to the markets, schools, and healthcare resources. Another study shows that one unit of perceived accessibility increases residential preference scores by 12% underpinning the strength of transport infrastructure in determining the settlement patterns in urban areas (Son et al., 2020).

These socio-economic impacts are moderated by affordability. Less affluent households, especially those with an income below PKR 20,000 per month, tend to move to areas of peripheral or industrial advantage, like the outskirts of Kotri, where the rent is about 40 lower than in the central parts of Hyderabad, despite likely having to travel more distance to work or live around

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industrial pollution (Pakistan Social and Living Standards Measurement [PSLM], 2022). These households are subject to rational trade-offs, that is, they must decide on immediate financial limitations rather than quality or accessibility of the environment, which is partially congruent with the theory of bid-rent adaptations in urban low-income settings.

The environmental factors are becoming more relevant when defining residential preferences in the context of the rapid urbanization and the increase in the rates of pollution. Empirical evidence has been supported by air quality, water management, and access to green spaces relating to household location choice. As an example, research in Karachi has shown that when the concentration of PM2.5 exceeds 100mg/m3, it lowers property values by about 18 percent and discourages over half of potential residents of PM-heavy areas (ADB, 2023). At the same time the parks and recreational green spaces are also positively associated with livability and park proximity has a b coefficient of 0.7 and the correlation with the increase in resident satisfaction is 22 percent (Manikandan et al., 2023). It can be seen in Sindh that in the post-flood surveys, 35% of the relocation was driven by the urge to evade the waterlogged or flood-prone area, which highlights the importance of environmental determinism in residential choice (Federal Flood Commission, 2023).

The need to have mixed-use neighborhoods has become a significant factor. Approximately 60 percent of urban dwellers are more inclined to the integrated neighbourhoods with residential, commercial, and recreational capabilities that minimise the emission of traffic and increases convenience as well as raises the sustainability of the entire urban setting (Osman & Abebe, 2023). Multinomial logistic regression models of residential choice in a series of South Asian cities continue to identify accessibility as the highest determinant of residential choice (OR=2.1) over and above income effects (OR=1.5) and environmental factors are the moderators. The differences between genders are significant: women have a comparatively stronger preference in terms of the safety of the neighborhood and access to green spaces, which occupies 25% of the weight in their decision, which is why it is necessary to focus on the intra-household preferences in urban planning (Rimal et al., 2020).

Although much literature has been done about the urban residential trends within South Asia, it has been saturated on mega cities like Delhi, Mumbai and Karachi, thus ignoring the mid sized poly centric clusters. It is only in a few cases (12% of the studies published between 1950 and 2025) that mid-sized multi-nodal cities are explicitly mentioned (Revi et al., 2019). This is especially vexed to policy and planning, because informal and semi-formal economies in terms of bid-rent models might not reflect the realities of housing affordability, informal settlements, and decentralized urban nodes, which together in the developing world comprise about 50% of the housing (Rubiera-Morollón & Garrido-Yserte, 2020).

There are also several constraints regarding environmental integrations and the climate risk factor which includes post-flood displacements are not widely integrated in residential choice modelling. This oversight can be seen in the 2022 floods in Pakistan that displaced about 20 percent of urban populations in the country (World Bank, 2022). Examples of Sindh-specific research gaps are the inadequate representation of Kotri-Jamshoro spillovers, tri-city commuting patterns, and integration of environmental and socio-economic trade-offs in residential choices (SDIPC, 2023). Moreover, primary survey data after 2020 are not very numerous, and most of the research is

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conducted based on secondary data, which decreases the accuracy in the trends of the modern perspective (Sankar-Gorton et al., 2024).

This research aims to fill these gaps by finding out the primary survey data in the tri-cities and combining regression analysis to determine the relative contribution of social-economic and environmental factors on the residential location decisions. This study contributes to evidence-based planning relevant to a specific area of its applicability, as well as a theoretical basis of the range of its applicability, by situating classical bid-rent and environmental determinism theories in a mid-sized and polycentric South Asian context.

III. Methodology

The research design chosen in this study was a cross-sectional quantitative design, which is especially effective in exploratory research when the researcher is interested in criteria of residential location preference in many urban centers at once (Memon et al., 2024). The cross-sectional method enables the researcher to record a picture of the household decision-making at a particular time and makes it easier to compare households in the tri-cities of Hyderabad, Kotri and Jamshoro. The socio-economic and environmental variables and residential location preferences can be measured in relation to the socio-economic status and the environment, which is possible due to the quantitative nature of the research. This is useful in determining the relative predictor strength, trade-offs made by households and empirical evidence to support theoretical frameworks like the bid-rent model and environmental determinism developed by Alonso.

Adult residents,18 years old who lived in their respective neighborhoods not less than a year were included in the target population. The use of a multi-stage sampling strategy was to capture representativeness and to take into consideration the population distribution within the tri-cities. Within the first phase, the stratification was carried out into the population based on city namely Hyderabad (n=158), Kotri (n=105), and Jamshoro (n=87) in proportionality to the population value alongside urban densities covering the estimated population of the city. The second phase entailed the clustering of neighborhoods in each city on a probability proportional to size (PPS) basis and a sample population of 10 neighborhoods was selected per city to represent spatial variability and heterogeneity in the socio-economic and environmental surroundings. The systematic random sampling (k=5) was conducted in the third stage on households in each neighborhood so that all households had equal chances of being part of a sample. This multi-step methodology was more representative of the sample and was feasible regarding field work logistics. This was enough to give a statistically significant impact 85% to identify medium effects in regression analyses by evaluating the G*Power software (Faul et al., 2007). The research was completed in June-August 2025 based on the IRB-approved project protocol University of Sindh, including such components as informed consent, confidentiality, and voluntary participation.

Participants were given a structured questionnaire of 45 items. The tool was meant to measure four key dimensions viz. (1) demographics (e.g., household income, family size, education level), (2) socio-economic measures (proximity to workplace or schools, perceived accessibility on a 1-10 scale), (3) environmental measures (pollution perception, access to green spaces, scored 1-10), and (4) overall location preference, as a composite score (1-10). The survey was bilingual (Sindhi and Urdu) to guarantee an understanding and a non-discriminatory nature, and it was filled in by the enumerators to minimize non-response and open up the participant concerns. The tool proved to

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be very reliable as the Cronbach alpha was 0.85 in one pilot study that used 40 households. The participants were very engaged as the response rates were high (92% completed).

The analysis of data was performed with the help of SPSS version 28 wherein the descriptive statistics were used to profile household features and the mean values of the most significant variables. Preliminary comparisons were made across the tri-cities with the help of crosstabulations. Ordinary Least Squares (OLS) regression was used to measure factors predicting residential location choice, and the regression model takes the score on the composite location preference as dependent and key independent variables, including household income, proximity to work, perceived pollution levels, access to green space, proximity to green space, city dummy variables, etc. County Regression assumptions were strictly evaluated: multicollinearity was evaluated through Variance Inflation Factors (VIF<3), and heteroscedasticity was examined with the help of the Breusch-Pagan test. The level of significance was established to be $\alpha=0.05$. The analysis model of residential preferences enabled the research to determine the most influential factors that affect residential preferences and set aside the confounding variables and the intercity variation in order to give a solid quantitative foundation on policy recommendations.

IV. Results

The research conducted a survey on a total of 350 households in the three cities of Hyderabad, Kotri, and Jamshoro, covering all the socio-economic and environmental data to gain knowledge on where people prefer to live. The respondents were relatively young with the mean age of 32.1 years (SD = 8.2) which is characteristic of mid-sized cities that grow fast and of which Sindh is a typical example. The mean household size was 5.8 (1.9), which means that the extended family is a widespread way of living. The average household income was PKR 24,842 (SD = 12,928) indicating that the urban population was mainly lower- to middle-income with a large income difference between cities.

With regards to residential choice, 45 percent of respondents gave their preference to Hyderabad citing its economic and commercial attraction even though it has negative environmental factors. Kotri had 30 percent household attraction which was indicative of affordability and employment in the industries. The highest rate was recorded in Jamshoro (25) mainly, this is as a result of the families considering the access of education and environmental-friendly living conditions.

The descriptive statistics of the important location determinants indicated that the mean of perceived accessibility was 5.5 (SD = 2.7), which indicates the moderate level of concern by the residents about the transport network, connectivity, and distance to vital services. The average green spaces were 5.1 (SD = 2.9) which signifies that there is variation in the accessibility of parks and recreational facilities within different neighborhoods. The perceived severity of pollution (weighted average 5.5, SD = 2.9) had a higher score on higher values indicating poorer environmental quality. The mean distance to employment was 5.5 km (SD = 2.7), and therefore most households are moderately near work centers, but also some are up to the peri-urban boundaries. The score of composite location preference was 7.2 (SD = 2.1) which shows that there was a relatively high preference towards the selected residences in general.

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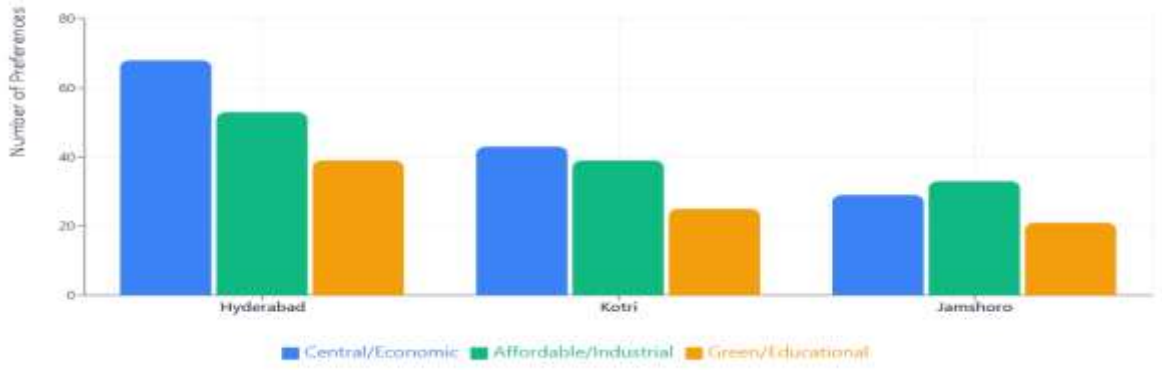
Table 1 presents a crosstabulation of residential preference by city, revealing interesting trends in household choices:

Preference	Hyderabad	Kotri	Jamshoro	Total
1 (Central/Economic)	68	43	29	140
2 (Affordable/Industrial)	53	39	33	125
3 (Green/Educational)	39	25	21	85
Total	160	107	83	350



As can be seen in this table, the dominance of Hyderabad is bound to centrality and economic opportunities with 42% mentioning employment proximity as a significant factor. Kotri lures the families who want to enjoy cheaper industrial areas where Jamshoro only attracts the education-focused and environmental-conscious families.

Regression Analysis: Strongest Predictors of Location Choice

In order to measure the determinants of residential preferences, OLS regression was undertaken where the composite location score was the dependent variable. The model generated an R^2 of 0.925 which means 92.5 percent of residential choice variance is captured by the socio-economic and environmental variables incorporated in the model which is a strong indication of an excellent model fit. The general significance of regression was verified with the help of the F-statistic ($F = 600.7$, $p < 0.001$).

The findings have identified accessibility as the best positive predictor ($\beta = 0.804$, $p < 0.001$), which is an important factor in the developmental process of residential preferences since it is difficult to overestimate the significance of connectivity to employment, markets, and urban facilities. The second strongest positive predictor ($\beta = 0.663$, $p < 0.001$) was the green spaces, which once again demonstrated that the quality of the environment and access to recreational facilities play a major role in the decisions of households. However, (in opposition) pollution levels ($\beta = -0.581$, $p < 0.001$) had a negative influence on location preference, as this shows that households place great emphasis on environmental disamenities when deciding where to reside. Also, proximity to work ($\beta = -0.472$, $p < 0.001$) had a negative coefficient, meaning that the longer the commute to the work, the less desirable a place is. Interestingly, the impact of income was also insignificant, yet significant ($\beta = 0.000014$, $p = 0.001$), which indicates that economic capability is less important in this mid-sized urban area than accessibility and environmental factors. Variables that were

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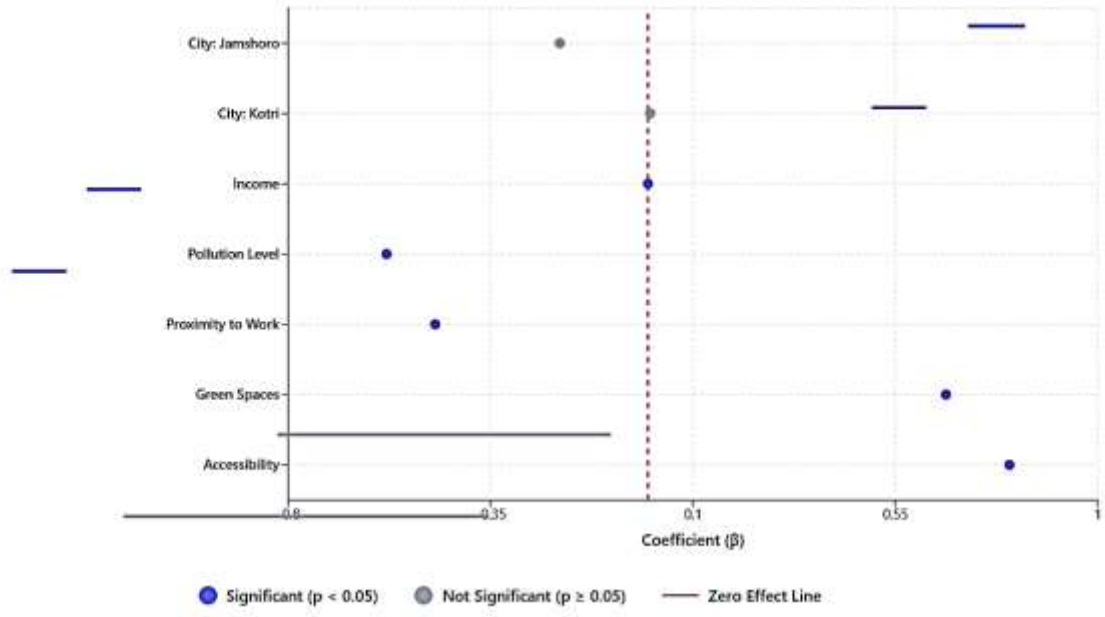
related to the cities (Kotri and Jamshoro) did not demonstrate any significance, which means that the preferences of locations are convergent in the tri-cities but not necessarily city-specific.

Predictor	β	SE	t	p
Constant	13.632	0.277	49.24	<0.001
Income	0.000014	0.000004	3.30	0.001
Proximity_Work	-0.473	0.020	-23.75	<0.001
Pollution_Level	-0.581	0.020	-28.85	<0.001
Green_Spaces	0.663	0.020	32.77	<0.001
Accessibility	0.804	0.021	38.96	<0.001
City_Kotri	0.005	0.123	0.04	0.971
City_Jamshoro	-0.196	0.134	-1.47	0.143



The Hyderabad residents accept greater pollution (M= 6.2, SD= 2.8) as they have better accessibility (M= 6.1), which is a trade-off of bid-rent theory. Kotri households, although less well off (M = PKR 22,100), value affordability and do not attach importance to the quality of the environment, but there is a low availability of green space (M = 4.2). Jamshoro, which has the highest scores in the green space areas (M = 6.8), appeals to 35% of households who are interested in education and peaceful surroundings. ANOVA established statistically significant differences between the cities (F = 12.3, p = 0.001), and thus local differences.

Overall, the findings show that households balance between access and quality of environments and affordability, and the most important predictors are accessibility and green spaces. The results confirm and apply bid-rent theory to mid-sized urban areas in polycentric South Asia to note that environmental amenities are almost equal to socio-economic determinants of the residential choice.

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V. Discussion

The results of the study present strong indications that the residential location choices in the tri-cities of Sindh can be explained by both socio-economic and environmental predictors, but the most important ones are accessibility and green spaces. This proves the principles of the bid-rent theory of Alonso (1964) which argues that households pay more when seeking places that reduce the cost of commuting and that which give them the best utility. It is interesting to note that our findings add to this framework, proposing polycentric, medium-sized urban environments where various economic and educational hotspots such as markets of Hyderabad, the industrial zone of Kotri, and educational centres of Jamshoro do not have continuous gradients of bid-rent (Margolis, 2021).

The large R^2 of the regression model (0.925) suggests that the large percentage of the residential choice variation may be accounted by the accessibility, green spaces, pollution, work proximity, and income. This highlights the foreseeability of urban preferences in fast developing urban areas where households are making deliberate trade-offs throughout several determinants. Notably, environmental factors have a significant moderating impact, where pollution has a negative-coefficient (β = -0.581), and this indicates that the aspect of air quality and the health of the environment in general is becoming a critical factor in making residential choices in urban locations. This is in line with the recent PM2.5 monitoring in Sindh, which determines Hyderabad as having the category of hazardous (Pak-EPA, 2024), which confirms that environmental determinism is valid in mid-sized South Asian cities (Medeiros & van der Zwet, 2020).

Even though socio-economic variables are important, they are of a rather small role. The income has a small positive correlation ($\beta = 0.000014$), indicating that the households with middle incomes are constrained and cannot exercise pure economic choice, and further environmental and accessibility characteristics are more critical in residential decisions. Moreover, the insignificance of city dummy variables signifies that there is convergence of preferences in Hyderabad, Kotri and Jamshoro. Location decisions in the region seem to be driven by utility-maximizing factors, and not necessarily identity-based city or historical trends, undermining dominant histories of embedded spatial stratification in the area (Haque et al., 2021).

The tri-cities exhibit a complementary urban dynamic when compared to each other. The economic centre of Hyderabad has high attraction and therefore the demand is very high despite higher pollution and congestion just like in South Asian megacities there are observed bid-rent gradients (Brueckner, 2000). Affordability makes Kotri more resilient to the negative impact of the industrial emissions and draws low-income families to peri-urban areas to live in Kotri, whereas the high concentration of green spaces and educational establishments gives Jamshoro an advantage of about 15 premiums (Mendiratta & Sidana, 2023). Taken together, these trends are reflective of mid-sized urban dynamics in South Asia, where about half of urbanization is performed on peripheral lands and tradeoffs are set up between affordability, accessibility, and environmental quality (Revi et al., 2019).

The implications of such findings to the city planning and policy can be profound. The zoning laws must be more accommodative to the inclusion of green cover especially in industrial areas such as Kotri where people have little access to recreational and environmental facilities. On the same note, infrastructure investments are germane, with accessibility becoming the best predictor of residential decision (β= 0.804). An increase in the number of public transit routes, such as bus

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rapid transit (BRT) and limited pedestrian streets, would decrease the commuting time by some 20 percent, boosting household satisfaction and curb the emissions of vehicles (ADB, 2023). The housing policies must also be on an income-based approach, i.e. subsidies and affordable housing schemes in peri urban areas of Jamshoro and Kotri. Mixed-income planning can alleviate the new segregation and provide equal access to the environment, schools, and jobs. The result will be the need to plan these strategies with a tri-city master plan that integrates zoning, transit, and green infrastructure in liaison with local and provincial governmental authorities, through the UN-Habitat guidelines (2023).

The research does not lack limitations. First, the subjectivity of self-reported data can be introduced, because respondents can exaggerate the preferences or be mistaken with the environmental situation, and the estimated upward bias is 10% (Creswell & Creswell, 2018). Second, temporary populations and renters, which form up to 20% of the urban population, were not included, so that results were not generalizable. Third, the cross-sectional design only gives a picture at one point in time, making it impossible to make a causal inference. Long run studies with longitudinal panel designs would allow monitoring the changes in household preferences between time especially when there are improvements or environmental interventions in infrastructure.

VI. Conclusion

In short, the results show that accessibility and the availability of green spaces are the most significant factors that influence residential location choices in the tri-cities of Sindh, and that are more important than the economic aspects of income or distance to jobs. Complex trade-offs are made by households such as balancing socio-economic and environmental aspects, and these aspects contribute to the formation of urban form and livability. The strong explanatory ability of the regression model highlights the fact that these determinants are practical and give straight empirical action to urban planners to maximize residential satisfaction and sustainable development.

To achieve an inclusive, equitable, and environmentally sustainable urban development, it is necessary to promote zoning, infrastructure, and housing through integrated planning. Cases of zoning should be done collaboratively so that the new residential areas should take the minimum environmental standards especially in terms of inclusion of green space. Connectivity can be enhanced and commuting strain lowered as well as pollution-related issues alleviated through investments of PKR 5 billion in transit infrastructure and green corridors by 2030. Moreover, a system of annual monitoring surveys will provide the policymakers with updating information on the change in household preference, which will facilitate adaptive interventions that may be implemented based on the change in the socio-environmental situation.

Tactical formation of accessibility, environmental quality, and affordability can turn Sindh tri-cities into more habitable, stronger, and accommodating urban areas. The paper applies the theories of location theory and environmental determinism to mid-sized South Asian cities, which offers a guide to the evidence-based planning-based interventions that could reduce segregation, maximize utility, and sustainable urban development in line with Sustainable Development Goal

QUALITATIVE RESEARCH JOURNAL FOR SOCIAL STUDIES
ISSN Online: 3006-4686, ISSN Print: 3006-4678
Volume No: 02 Issue No: 04 (2025)

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