

Abstract of Doctoral Dissertation

Examining the Influences of Urban Forms on Travel Behavior and Location Affordability: Case Study of Rawalpindi-Islamabad, Pakistan

Doctoral Program in Policy Science
Graduate School of Policy Science
Ritsumeikan University
カン アブ バカル ラファット
KHAN Abu Baker Rafat

Taking theoretical and empirical evidence from the previous studies on built-environment, and housing and transportation planning, this dissertation established a hypothesis that urban form indicators significantly influence one's travel behavior, travel satisfaction, and associated costs. This hypothesis is then tested using three different analyses. This dissertation is the extension of the major findings obtained during masters' independent research work, which determines the accessibility of bus rapid transit service (BRT) located in Rawalpindi-Islamabad Metropolitan Area (RIMA). Since those findings included only one service facility, i.e., BRT, this dissertation argues that multiple service facilities should be examined to analyze the impact of geographical location on households' travel behavior, and travel costs to determine location affordability.

Several studies have stated that easy access to urban facilities from residential locations determines whether a household feels attached to the community's-built environment that they are currently living in, hence, giving birth to a concept of location attachment. Though several studies focus on the residents' level of accessibility, they target only one facility using one case study. Hence, empirical studies on the access capacity of urbanites to multiple service facilities are also a handful.

Furthermore, housing and transportation affordability studies have continuously supported the theory of location affordability (LA) which states that residents living in proximity to transit and other facilities spent less income share on transportation costs, offsetting high housing costs. However, the broader thesis in this dissertation argues that urban form measures and travel behavior could also determine LA and produce unique results when applied in the developing city context.

This research employs a mixed-method approach, i.e., spatial and statistical analyses, to address the city-wide accessibility to five service facilities, and the factors affecting transportation (T) costs in RIMA context. Residential parcels were extracted from Google Earth, and addresses for service facilities were taken from official private and government websites. This data was then geocoded in ArcGIS. Additionally, nine study sites were chosen to conduct household survey and 435 valid samples were collected from the selected sites.

First, the GIS analysis found that dividing the service facilities into their respective large-scale and small-scale dimensions was influential in determining the city-wide accessibility in RIMA. The results indicated significant discrepancies with access to low-order and high-order service facilities across RIMA. In conclusion that the provision of a lower proportion of service facilities should be considered when establishing affordable housing for low-income people.

Second, the multivariate regression demonstrated that the household characteristics significantly impacted transportation (T) costs, followed by the distance from the city center. Meaning that when moving towards the city core, the average T costs decreased substantially. Additionally, frequent and often public transportation (PT) usage, and frequent visits to education facilities showed significant positive associations with T costs. The findings suggest that policymakers consider affordable locations close to service facilities when establishing affordable housing schemes. Pakistan have built housing schemes on a large scale for low-income people at locations with low proximity to service facilities, causing high transportation costs. These factors may influence the livelihood of an average household who depends highly on PT. The research findings can contribute to the literature on affordable housing policies, accessibility, travel behavior, and location attachment.

Keywords: Accessibility, housing and transportation costs, location affordability, location attachment, Rawalpindi-Islamabad.