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LAND USE REVITALIZATION AS A CONSEQUENCE OF BUS RAPID TRANSIT IN LAHORE BASED ON CONTEXT CHARACTERISTICS

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ABSTRACT

Bus Rapid Transit system, the first ever experience in Pakistan, had been developed in the city of Lahore in 2013 resulting into various development growth change aspects like land use, land value, building construction mechanism and economic development. Because of it being not incorporated in the Lahore Master Plan 2004-2025, applicable at the time of implementation, no channelized development or restriction on the use of land could have been ensured. Where development along the corridor has brought many gains, it has also had adverse impact over the planned development of city. The needed amendment of Master Plan of city requires some grounds and solid justifications to re-project urban development along this corridor to ensure haphazard development to channelized one. The research paper is the study of BRT construction impacts on land use along the corridor. The paper analyses the existing land uses along BRT corridor and studies the impacts of property regeneration as a consequence of revitalization along the corridor. The study identifies six revitalization trends in land parcels along the BRT corridor and suggests policy measures that facilitate land use change potential along the corridor in planned manner.

Key Words: Land Use, Revitalization, Bus Rapid Transit, Master Plan, Economic Development.

1: Introduction

Transportation plays a key role in land use development especially in urban areas where primary roads acts as transit corridors. Transit oriented development happens along primary roads of city after introduction of exclusive mobility options on these roads. Transit oriented development is an approach towards smart urban growth. The existing literature gives direction of smart growth through transit oriented development as tabled below. The assessment mechanism or definition of this pattern of development varies with nature of urbanity in cities. It can be concluded from table number 1 that transportation improvement has positive effect on land development. An eminence public transport system can increase the accessibility of its catchment area and these areas in turn tend to be more desirable for future development and redevelopment. Based on the experiences of cities that have effectively employed the BRT system, the system is only prospered when implementation gets combined with all the stakeholders participating in the implementation in a sort of systemized method. The successful and comprehensive operational mechanism can be made applicable only by addressing all possible scenarios.

Development of the Bus Rapid Transit system is the first ever experience in Pakistan taken up in the city of Lahore. Likewise other countries, the development of it relates to various aspects like land use, land value and economic development. These aspects can be affected, both, positively or negatively. The project of BRT was not incorporated in the master plan 2004-2025, applicable at the time of implementation, so channelized redevelopment could not have been ensured. Do nothing policy becomes automatically active in the absence of policy document or inactive city master plan.

BRT corridor	Author & year of publication	Study details	Findings
BRT Seoul, South Korea	Cervero, R., &Kang, C.D., 2009	Bus rapid transit impacts on land uses and land values in Seoul, Korea. [1].	Transportation plays a key role in shaping urban real estate. High property value, zoning permits and land use intensification are consequential aspects of transportation improvements.

Seoul, South Korea	Cervero, R., &Kang, C.D., 2009	From elevated freeway to urban greenway: land value impacts of the CGC project in Seoul, Korea.[2]	Land use shapes and shaped by the Transport. [2] With the good transportation network, transit oriented development is ensured which is an approach towards smart growth development, contributing largely towards economy.
BRT San Francisco and Oakland	King Jr, P. M. L., & Busway, E.	Land Use Impacts of Bus Rapid Transit. Transportation and Land Use Coalition (TALC). [3]	Transportation and Land-Use Coalition (TALC) encourages BRT in San Francisco and Oakland using the argument that BRT can promote smart growth likewise rail; taking into account three rail-like qualities: high ridership, fewer stations, and infrastructure permanence. Significantly, TALC also underlines that there must be appropriate design and supportive land use policies in order for BRT to support development along transit.
Case studies	M. Te Brommelstroet & L. Bertolini.	A transition towards sustainable strategy making: integrating land use and transport knowledge types Transitions Towards Sustainable Mobility [	Many cause-effect relationships are built with the development of BRT. Urban development, growth and infrastructure influence travel patterns and transport modes.. The integration between land use and transportation is seen an essential component that plays a major part in the development of cities
London's rail lines, UK	London's Royal Commission on Metropolis Railway	Door to door survey in mid of 1800's [5]	Transit oriented development have had a positive impact on property values. According to result of survey the weekly and monthly rents rose from 10% to 25% because of the proximity of the area to rail stations.
Beijing, China.	Deng, T., & Nelson, J. D. 2010	The impact of bus rapid transit on land development: a case study of Beijing, China. [6]	Another supportive example is of Beijing, China where locations became more desirable for high density residential apartments projects and this development also created more opportunities for business along the corridor and on the BRT stations. It was found out that increase in accessibility conferred by BRT result in higher real-estate prices. From 2004 to 2009, the average values of residential properties near a BRT station increased faster (annually 2.3% higher) than those not served by the BRT [6

Table No. 1: Researchers Findings

1.1: Purpose of Study**:**
In many countries, the transit oriented development has resulted into high rise development or high density growth along the corridors. A strategic planning framework that links its centers with a rapid transit base has enabled a planned growth [14]. So, there is a need to know the potential of development along BRT corridor in the Lahore city and to analyze, in future, what type of land use will prevail along the corridor in the future. As there is no specific policy which is available for this corridor and the development is taking place in an uncontrolled manner, so formulation of a policy is much needed for this area. BRT has strong potential of furnishing urban growth.

Development of the Bus Rapid Transit system is the first ever experience in Pakistan taken up in the city of Lahore. Likewise other countries, the development of it relates to various aspects like land use, land value and economic development. These aspects can be affected, both, positively or negatively. The project of BRT was not incorporated in the master plan 2004-2025, applicable at the time of implementation, so channelizesd redevelopment could not have been ensured. It became vital to study the potential of changes in post BRT scenario so that guidelines could be proposed to amend the prevaling city master plan 2004-2025.

1.2: Scope of Study**:**
The study addresses to the integration of land use and transportation in the light of BRT and highlights the probable impacts that mass transit system has or could have on the nearby land use. The paper after literature review leads to review of the conducted research in the respective case study area, continued with the results achieved from the analysis and tabulation of the collected data. Conclusions are then built from the findings obtained

1.3: Objectives of Study
The objectives of this study are

1. To study the impact of BRT on abutting land of corridor.
2. To identify the land revitalization indicators
3. To prepare the land use map of the corridor
4. To propose guidelines for amendment in prevailing city master in post BRT scenario

2: Literature Review
According to Cervero, R. and Kang, C. D., in Seoul, due to increase in accessibility there was more intensity land uses along the BRT corridors. This study also argued that the quality of transport service, specifically the travel time savings, influenced land development and BRT-induced land appreciation could help the BRT investment [9]. Also, Rodríguez, D. A. and Mojica, C. H founded that there was a 13% to 14% increase in land prices in residential properties which were located within 1km of the Bogota's BRT system. The results from the study concluded that BRT network investments can increase property values in areas already served by BRT and this can also increase the opportunities for dense development in the area [10].

A link between transit station proximity and property values is being studied. Mixed results were achieved with increased property values at some places whereas the opposite being in some other. Most of the studies have focused only on residential property values, but very few have focused on more than one property class at a time. Dating back to the mid-19th century, researchers worldwide have attempted to find the correlation between transit and its effect on housing property values.

In Buffalo, New York in 2006 the hedonic pricing model was used to assess the impact of light rail station on adjusted residential property values. According to the research there was an increase in average property values by $2.31 for every foot closer to the station within a half mile of fourteen rail stations [12]. By using hedonic model other control variables such as number of bathrooms, the size of the parcel and location on the East or West side of Buffalo was also incorporated. The result suggested that these independent variables were more telling of property values than proximity to the station. From the past research, it was also determined that proximity effects differently high and low income areas whereas in buffalo study concluded that proximity effects are positive in high income station areas and negative in low income areas. These result are opposite to the Nelson's study of Atlanta's MARTA (Metropolitan Atlanta Rapid Transit Authority) in which he concluded that proximity to station is positive factor. From this literature hypothesis becomes strong that LRT and heavy rail have different effects on property values.

In Portland, Oregon, the Portland State University Center for Urban Studies uses GIS approach to determine effect on single family home values causes by light rail system. The authors contradicted that in previous research hedonic pricing model was used which ignore the effect that nuisance effect differ with different types of rail or other local characteristics. The result of the study suggested that proximity to rail have both negative and positive effects (regardless of neighborhood income) there was no constant effect on the overall area. It was founded that the positive effect (accessibility) outweighed the negative effect (nuisance), which result decrease in price gradient as distance from the LRT station increase. Parsons Brinckerhoff Quade & Douglas 1996, the authors concluded that without controlling for the nuisance effect of the distance to the rail line, estimated coefficients on distance from stations appear to be biased and underestimate the accessibility effect [13].

Thus, with a body of large supportive literature the concept of transit oriented development is studied deriving various element and aspects of study. BRT, an approach towards transit oriented development, is also affecting the neighboring land uses by a number of factors and characteristics; the role of which is being studied under the conducted research. Comprehensive literature review has identified many key indicators which need to be addressed while studying the phenomenon of land use revitalization as a consequence of bus rapid transit.

Seeing the dynamics of development, it becomes evident that land use and transportation are mutually dependent and transportation is the one shaping the urban structure. It becomes vital to study the dynamics of this mutual relationship and explore each tear of this bond separately.

2.1: Land Revitalization

As the research is related to analyze the land revitalization or change potential of properties along BRT corridor so it is vital to understand about revitalization term. The term revitalization is greatly associated with urban revitalization. In the same context it is defined as under:

"It is a process that comprises a set of urban management strategies to facilitate economic, social, environmental, cultural and historical (re) development of problematic, deprived and derelict urban areas." [8]

Revitalization means the redevelopment of land and revitalization potential means the potential of land to be changes due to any change in circumstances as in case of BRT introduction on the existing primary road of city.

It, thus, aims at retaining the element of sustainability which ascertains people's well-being by addressing to multi-aspects of development. A number of characteristics are affected some of which include the travel pattern of people, ridership of the transit route, impact on property values, environmental impact, economic and social characteristics etc. Land use pattern changes with development and transportation is one sector which keeps intact the integration between the two. Thus this interaction plays a pivotal role in ensuring a cohesive development. The extant of this revitalization phenomenon is vital to be analyzed.

3: Methodology;

The methodology adopted to carry out this study was largely based on interview / questionnaire surveys. This interview survey was done at three levels.

1. First level of interviews survey was done from property owners, tenants and visitors of properties abutting to the corridor.
2. Second type of survey was from property experts i.e. real estate agents and property experts.
3. Tired types of survey was from government officials responsible for regulating development along the BRT corridor i.e. LDA officials and TMA officials.

Another approach was also opted to access revitalization trend along the corridor by two different surveys.

1. By dong land parcel survey in pre-BRT and Post-BRT time.
2. By checking the official record of proposed building related projects on this corridor.

These two approaches facilitated to analyze the BRT impacts on the land along the corridor.
Descriptive analysis technique is adopted to analyze the survey results.

4: Results

The survey results of Questionnaires are discussed below.

4.1: BRT Lahore; the case study

BRT Lahore was inaugurated in March 2013 and the development of it is expected to expand in the coming years. The route has a total length of 27 km and has 27 stop stations. With a total number of 64 buses having occupant capacity of 108, BRT is gaining ridership with the average equivalent to 123000. Seeing the peak hour ridership of 10000 passengers and estimated project's cost of 30 billion, BRT is generating significant amount of revenue for the government. The interaction between it and neighboring land uses is important to study. The land use pattern, accessibility and economic values associated with this transit mode is intrinsic of research. Policy to guide smart growth along this potential corridor is need of time.

Development of BRT corridor has resulted into changing land use patterns with phenomenon's relating to building plans approval, increased property values and property amalgamation with multi-storey plazas. To have an insight into the phenomenon of land use revitalization along BRT corridor, the section chosen as case study is from Chungi Amar Saddu Station to Kamahan Station Lahore. This patch of the corridor is 600 ft in width and is comprised of mixed land use development.
The characteristics of the area along the corridor have been studied and the previous land uses have also brought into consideration. On the basis of this the future uses have been evaluated and suggested. In the light of various socio-economic aspects, the impacts of BRT are studied which puts forth the need for land use revitalization aimed at maintaining the land use-transportation integration.

The selected section of the corridor is majorly a hub of commercial activities. In the light of this, surveys were carried out and questionnaires were conducted from the shopkeepers. The whole track of BRT is commercialized with several types of shops which are categorized as retail shops, whole sale shops or others. The questionnaire consisted of different sections with first one comprising of questions leading towards general information regarding the respondents' commercial properties. Whereas the second section deals with the impacts that BRT has on their shops. Public opinion has also been brought into study by interview survey. People have been asked regarding the land use revitalization project if carried out along the corridor. Lastly, the problems faced by the people as a result of BRT construction, along with suitable suggestions were acquired.

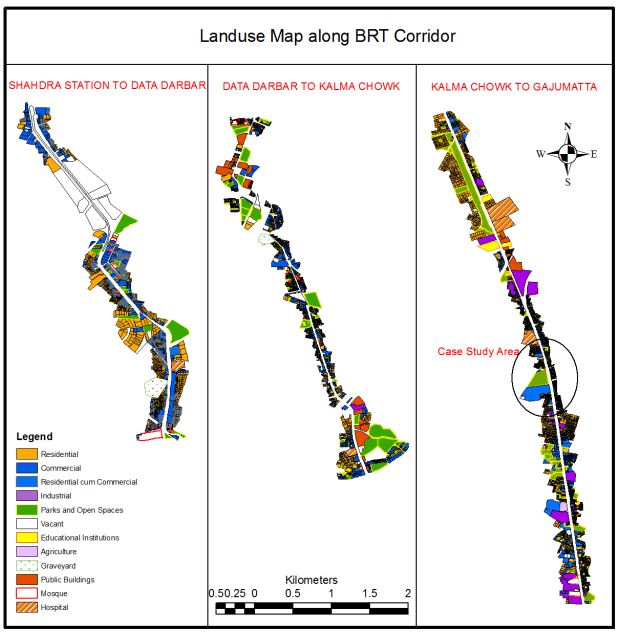
The results of the study conducted in the chosen section of BRT reveal diversified options and responses. It becomes evident from the results that transportation, activity patterns, land uses and accessibility are interdependent. The factors pertinent to the study conducted and various other aspects have been explained below:

4.1.1: Land Acquired for BRT

In order to make BRT operational along with existing modes on the particular road section, separate lanes were to be made. For this purpose, land was acquired in form 9 different awards to maintain the width of road throughout the section. Different sized plots were acquired based on DC rate of properties, and compensation was given. With total land acquired land of 217 Kanal 4 Marla 213 Sq. feet, compensation rate of approximately 1.4 million per Marla was devised. Hence, the total amount of compensation for all plots equaled Rs. 6,06,20,00,000/.

4.1.2: Existing Land Use Pattern along the Corridor after 3 years of BRT construction

A trend of mixed size and mixed use development is seen along the corridor. As far as the dominant uses concerned, both sides of the corridor have a blend of commercial and public buildings. The map shows the existing land use pattern along the three main sections of the corridor.



4.1.3: Area, Type and Worth of Commercial Properties

The responses unveiling the percentage for the type of shops showed that more than 50% of the section under study had retail shops. However, these are comprised of both small and large shops. As far as the area of commercial properties in the area is concerned, a larger percentage of approximately 47% are spread over an area of 3 Marla, while almost an equal percentage i.e. 41% is spread over 8 Marla plots. Along with this the existing worth of the shops was also analyzed which showed that 59% of the shops in the area were worth more than 3 million. The reason attributed to this was their prime location with respect to BRT

Area of Shop		Type of Shop		Condition of Shop	
3 Marla	47%	Retail	59 %	Less than 1 Million	23 %
3-5 Marla	6%	Whole Sale	23 %	1-3 Million	18 %
6-8 Marla	6%	Other	18 %	Above 3 Million	59 %
Above 8 Marl	41%				

Not only has this but the status of shop, holds equal importance in studying the land use revitalization process for the section of corridor. The identification of real stakeholders helps in the preparation of the framework of the revitalization and the effective engagement of stakeholders in the process. The survey revealed that all the shops in the case study had the status of owned. No shop was rented out to tenants. Moreover, the construction of BRT affected the condition of existing building leaving only 53% in good condition.

The percentage break-up for the aforementioned aspects is shown in the table 2 below:

4.1.4: Element of Compensation Cost

The construction of BRT has posed great impacts on the commercial properties of people. Also, the building condition has faced some of the adverse impacts where in some cases lands have also been acquired. The study revealed the results for the compensation amount received, people's response towards it, the percentage area acquired by the government, and the compensation cost received. All these factors have been addressed and made part of the study.

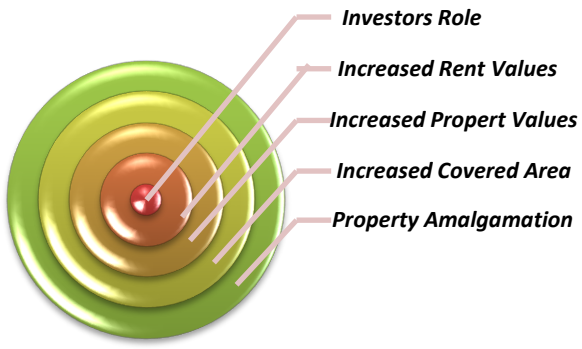
Maximum of the respondents approximately 94% said that they have received the money in terms of compensation of demolition and only 6% told that they didn't receive any of such dues. People who had received the compensation were further inquired if they were satisfied with the compensation amount given to them. The survey disclosed that only 35% shopkeepers were satisfied with the compensation amount but on the other hand 65% of them were completely dissatisfied.

Considering the impacts of the BRT project, government acquired land for its construction. Majority of the property owners had to let go an area of more than 2 Marla, with 70% receiving compensation cost greater than 9 Lakh from the government. The overall results attained are exhibited in table.

Compensation Received		Land Acquired		Compensation Cost Received	
Yes	94 %	Less than 0.5 M	18 %	Less than 3 Lac	70 %
No	6%	0.5-1 Marla	29 %	3-6 Lac	12 %
Satisfied	35 %	1-1.5 Marla	29 %	Above 9 Lac	18 %
Dissatisfied	65 %	Above 2 Marla	24 %		

4.2. Revitalization Trends

To study the revitalization trends along the BRT corridor, several LDA officials were interviewed and it was known that after its inauguration, notable revitalization phenomenon has been observed. A total of 8 trends were identified. These are listed as under in figure All the above cited trends are explained briefly in sections ahead.



4.2.1: BRT & Property Demand

The increase in demand attributable to public transport is a function of the type of service. The distance from the property to the system, the quality of the service and transportation alternatives in the area are all related to this aspect. Most studies of land value impact of public transport look at only one type of service and focus on distance between the property and the nearest station [16].

As part of the study being conducted, the paper brings forth the effect of BRT on Demand for a property, also on the abutting properties, increase in the price per Marla and effect of BRT on the monthly income of people. Results revealed showed that to the maximum number of people i.e. 88% the demand of property has risen whereas 94% agreed the same for abutting properties. This factor is important to study as it is beneficial when analyzing the phenomenon of land use revitalization with respect to the merging of adjacent properties.

Demand of Property		Demand of Abutting Property		Income	
Yes	88%	Yes	94%	Yes	77%
No	12%	No	6%	No	24%

The development of BRT has also brought economic gains to people as when asked about the income, overwhelming majority were of the view that a significant increase in their monthly income has resulted further adding that they are expecting further increase in income in the long run. Moreover the escalated property values have also been observed as 35% stated that approximately 3-5 lac per Marla increment is seen in the value of property.

Table and Figure shows the percentage break-up of the results achieved for the above mentioned aspects

4.2.2: Public Opinion for Land Use Project Revitalization

Public participation plays a key role in development of any project. Collaborative planning and public participation helps achieve the established goals. Since they help develop programs and are a means of providing information and legitimacy, their opinion must be taken in decision making process [17].

In light of the research conducted, participatory approach has been adopted and public opinion is pursued. People were asked about their business plan whether they've switched to another or not. For the purpose of analyzing land use revitalization project, willingness of people regarding the purchase of rear side land, on increasing the covered area and merging of property, and support provided for revitalization project are the factors that have also been addressed.

Change in Building Plan	
Yes	12%
No	88%
Willingness to Increase Covered Area	
Yes	65%
No	35%
Willingness to Buy Rear Side Property	
Yes	41%
No	59%
Willingness to bring Structural Changes in Property	
Yes	94%
No	6%

Majority, approximately 88% had not brought any change in their business plan. Regardless of this, the change in land use holds importance while learn about their flexibility of nature for the process of revitalization. 100% shopkeepers said that they have not changed the land-use ever, it's same from the very first day they had it.

The concept behind willingness towards increasing the covered area of shops, leads to the phase of property merging. Nearly 65% shopkeepers showed their willingness. Also, more than 50% respondents negated the idea of the purchase of property at the backside of their plot. However, when asked about bringing structural changes in the property, 94% seconded the idea. Vast majority were of the view that they want to construct a multi-story plaza due to numerous reasons; First reason is that as frontage of their property/building is totally demolished during BRT construction so there is opportunity for them to construct well designed building. Secondly as demand of abutting properties also increased so multi-storey plaza is best option.

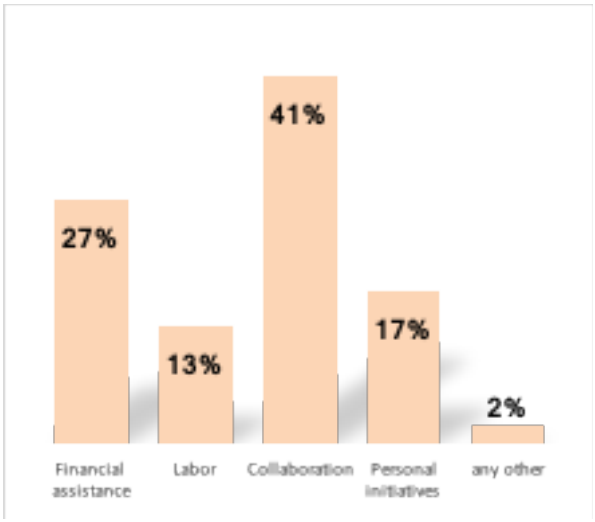
Below is a table, which shows the percentage of the results, achieved for the above mentioned aspects.

As the area is primarily regarded as commercial road, parking is one major factor to be addressed upon. While conducting the research, the respondents disclosed that they face serious parking problems within the premises of their shops. Also, because, construction work is still being carried out in the area so, rare it is, that customers get a space to park. 82% of the results revealed people encountering the issue of parking.

Knowing that land use revitalization needs massive public support, respondents were also inquired about their supportive role. The possible assistance they can provide in carrying out the revitalization project was pursued. The purpose was to sense the spirit of contribution by the willing stakeholders. Following bar chart shows the percentage towards different kinds of assistance to be provided.

As merging of buildings is an important aspect in land use revitalization project, so the respondents were asked about their willingness to merge their property with adjacent properties for construction of multi-story buildings/plaza. The recorded responses show that only 18% respondents were found willing and other 82% were found completely disagreed. Respondents said that they'll only agree to this if the present portion of their property remains within their custody after merging.

Since, the success of any project lies in the hands of its developers, so possessing core transferable competencies need to be ensured. Respondents were also inquired regarding the initiative if taken by the private developers or by the government in context of land use revitalization project then how much increased cover area would be acceptable for them on account of compensation. Mixed responses were achieved. 46% showed acceptance for an area >400 sq ft incase the Government takes up the step while 53% accepted the same in case of private developers.



4.2.3: Increased Approved Building Plans

Post BRT scenario reveals that there has been a significant increase in the number of approved building plans. The building plans approved were mostly seen from March 2014 to March 2015. A total of 7 plans were approved in March 2015 whereas those in the previous year were even higher than this i.e. 11. This clearly indicates how BRT has impacted the surrounding land use with construction of new buildings.

4.2.4: Property Amalgamation

For the purpose of constructing multi-storey buildings, phenomenon of property amalgamation is observed. Under this, small sized plots were amalgamated into large parcels to fulfill the criteria of requisite floor area ratio for multi-storey construction. Several plots were merged together and multiple storeys were hence constructed. An example of this trend is seen in form of Makki Complex Project where 3 different sized plots were merged together to generate one big land parcel. As a result the total plot area amounted to 41400 sq. ft with covered area equivalent to 168428 sq ft. The plan got sanctioned in year 2015 and the investment over the project estimated to Rs. 44, 46, 66,400. Despite other amalgamation phenomenon examples, that of Makki Complex is one major project taken up. Picture below is an image showing Makki Complex during its construction.

4.2.5: Increased Covered Area

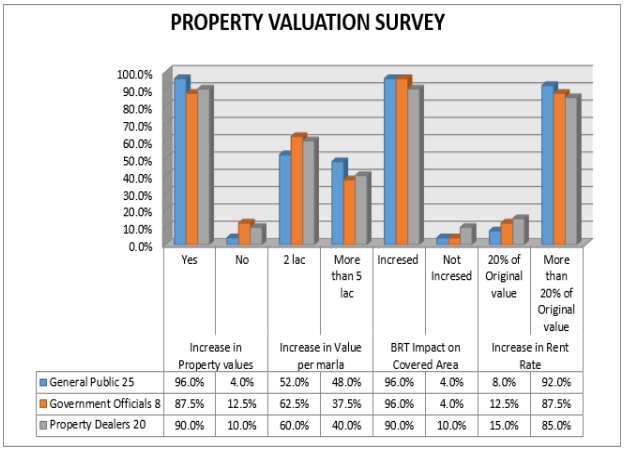
The construction of BRT has resulted into an increased covered area for several properties. With this, increase in the number of storeys also resulted. Comparing pre BRT scenario with post BRT up till 2015, the trend of increased covered area is well observed on both sides of

the corridor. The total increased covered area along with the estimated investment incurred on two sides of BRT corridor is shown in table while Picture shows two properties in this regard.

CORRIDOR SECTION	TOTAL EXCESS COVERED AREA INVESTMENET
From Chungi to Kamahan	2350 X 70050 = 16,46,17,500
From Kamahan to Chungi	2350 X 63300 = 14,87,55,000
Total investment on both sides	Rs. 31, 33, 72,500/.

4.2.6: Increased Property Values

The construction of BRT has resulted into increased property values along the corridor. The rate of increase is equivalent to 29.30% which 9.5% greater than that observed in other parts of the city. The results of property valuation survey are shown in Figure.



4.2.7. Increased Rent Values

Where increased property values were seen along the corridor, high rent values were also observed. The average rate of increase was known to be 26.3% which is 6.67% greater than in any other part of the city. Table shows the change in rent values under pre & post BRT scenarios.

Along BRT Corridor

Sr. No.	Property Name	Area	Number of Stories	Pre BRT Rent	Post BRT Rent	%age
1	Good LuckHonda Center	220 Sq Ft	S/S	13000	17000	30.80%
2	Shahbaz Milk Shop	130 Sq Ft	S/S	4000	5000	25%
3	Zoom Energy Drink	2.5 M	4/S	55,000	70,000	27.30%
4	Furniture Shop	270 Sq Ft	S/S	4500	5500	22.20%
		Average				26.30%

4.2.8: Investors Role

As a result of the observed revitalization trends that increased the overall importance of the BRT corridor, many external investors have played their role in new development. With increased property values, investors acquired small land parcels and amalgamated into bigger ones. Consequently, multi-storey plazas have been constructed and huge investment made. Some of the major projects taken up by the investors include construction of Makki Complex, Project of Kh # 467(1-2), Ferozpur Road and Project of Kh # 2135-2140-2141 Mauza Jhulkay. Other than these cumulative amount investment made for small sized plots along the corridor is already discussed under section 4.2.5 ***(see Table)***

The estimated construction cost of Makki Complex is Rs. 44,46,66,400 whereas cost of Kh # 467(1-2) is Rs. 56,03,000 and that of Kh # 2035-2040-2141 is Rs. 3,82,46,100. Hence, the total investment of mega projects is estimated approximately PKR.48, 85, 15,500. Thus, it can be clearly viewed how much the BRT has contributed towards the overall development of the corridor.

9: Conclusions & Findings

To conclude the entire conducted research, it will be right saying that the results have been achieved on empirical basis. The limitation of research was about selected case study area. The entire BRT corridor is 27 km in length and 600 feet wide so it was difficult to conduct research on the entire corridor because to complexity and availability of data so case study area from Chungi Amar Sudhu Station to Kamahan station was selected having mixed characteristics of entire corridor. The results of this study reveal that a large number of people have shown positive response about the fact of land use and transport integration. Keeping into consideration the economic importance this corridor holds because of BRT, the research conducted has underscored the need and significance of a land use revitalization policy.

The deducted results can be concluded in the following discussion to conclude the study.

- The BRT corridor is intensified with public and commercial buildings and is accommodated with a significant population
- Construction of multi-storey plazas have increasingly taken place that has resulted into high number of approved building plans
- As per required floor area ratio of Building and Zoning Regulation of LDA that got amended in 2014, phenomenon of property amalgamation is widely seen in the area
- Covered area for various plot sizes is also observed increasing holding most significance with respect to those which were effected as a result of BRT construction
- Property values have increased at the rate of 29.7% which is 9.55% higher than other areas of Lahore
- Likewise rent values have also increased at the rate of 26.3% which is 6.67% higher than other parts of the city
- Around 60% of the external investment has also been witnessed in the corridor
- It was known by the respondents that government initiated revitalization projects are more reliable than those by private bodies.
- Land amalgamation phenomenon is happening because to legal hindrance to multi story construction named as FAR which restricts small size plots to go high.
- The amount of investment spent by private investors along the corridor is more than the government investment spent on the project construction.
- Existing building regulations of regulatory body ie. LDA need to be amended in terms of floor area ratio (FAR) and commercialization rules to facilitate multistory buildings along this corridor. The technical backing in amendment could be obtained through this study outcome.
- Private/external investment factor need to be addressed in feasibility report of project.
- Existing body of knowledge has missing aspects about above mentioned technical and legal factors related to building regulations of regularity body to facilitate land revitalization process. The outcomes of this research addresses as well as facilitates the policy making process.

10: Recommendations

It is needed to prepare the special building regulations for supporting multistory development along the corridor so that maximum population may be adjusted in this area. Land use revitalization policy to be formulated which would strengthen development along the corridor. Public-private partnership would bring considerable benefits with transit improvements. Land reclamation along with land redevelopment should also be taken up to have incentives for owners merging their properties with adjacent ones. Private investors should be considered as stakeholders.

Integration of BRT to local zoning and land use planning provision will give results of clustered population near stations. Connecting or feeder infrastructure will facilitate to serve more households with this project benefits. Preparation of redevelopment plan of surrounding properties is dire need of time.

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