

Impacts of Land Use Dynamics and Accessibility on the Bid Rent System in the Central Business District of Peshawar - Pakistan

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Abstract:

The bid rent system is the prime indicator of land valuation, economic and developmental activities. In the Central Business District (CBD) of Peshawar, the bid rent system is more complex where the impacts of land use dynamics and accessibility modified the bid rent system. The land use dynamics and accessibility relationship with the economic and particularly with commercial activities are studied. The spatial arrangement of commercial activities follows the bid rent system with certain modifications. These modifications are the product of the impacts of land use dynamics and accessibility. The results are rectified by comparison of existing land valuation system and the modified by impacts. The study reveals a new dimension of the bid rent system in the CBD of Peshawar. Incorporating these new indicators in the analysis of bid rent system will enhance the capacity of line agencies and private sector to achieve sustainable development in the commercial activities of CBD.

Keywords: Bid Rent System; Land Valuation System; Central Business District; Land Use Dynamics; Accessibility; and Commercial Activities

I. Introduction

The concepts of accessibility and land uses are closely linked to bid-rent system (Alonso, 1960). The location quotient for a commercial activity is defined by nature of accessibility (Clay & Valdez, 2017; Liu, Rosenthal, & Strange, 2018; Ward & Aalbers, 2016). Saddar Bazaar is the Central Business District (CBD) of Peshawar. The CBD of Peshawar has most accessible location in the city and grid pattern of roads and

streets in the CBD made it most favourable for commercial activities. The CBD occupied the highest bid rent place in the city (Ali & Malik, 2019; Ali, Malik, & Jan, 2018; Government of Pakistan, 2018). The accessibility in the CBD also affected the location of economic activities in the bid rent system in the CBD (Cox, 2017; Thrall, 2017; Wheaton, 1974). The mode and pattern of accessibility in the CBD is more dynamic as here not only the vehicular but also the pedestrian and vertical accessibility are of prime importance (Clay & Valdez, 2017; Kantor, Rietveld, & van Ommeren, 2014; Liu et al., 2018).

The land valuation & taxation system from the Government side and existing open market land & rent system represents the existing bid rent system in the CBD (Government of Pakistan, 2016). The variability among the indicators of the existing bid rent system shows that there are some other factors that modified the bid rent system in the CBD of Peshawar. These factors are land use dynamics and more diversified types of accessibility that shaped the bid rent system in the CBD of Peshawar (Clay & Valdez, 2017; McMillen, 1997; Thrall, 2017; Ward & Aalbers, 2016). The impacts of accessibility on the bid rent system is of fundamental importance for shaping the commercial structure of the CBD (Cox, 2017; Ward & Aalbers, 2016). In present study, the detail mode and nature of accessibility are first quantified with the commercial activities then their combine impacts on the bid rent system are studied. The impacts of all indicators of land use dynamics and accessibility are combined. These impacts are compared with the indicators of existing bid rent system which provided a rectification for the assessment. These impacts are more dynamic in nature as incorporated the vertical aspect of land uses and pattern of commercial activities as well as spatial dimension. The present study provides a new approach and indicators to understand the bid rent system in the CBD of Peshawar. The spatial and vertical arrangement of commercial activities has changed the bid rent system in the CBD of Peshawar. This modification is of prime importance for city planners, line agencies and private sector investors. On the one hand, it shows the paying abilities of customers and on the other hand, the region and sector of the future investment.

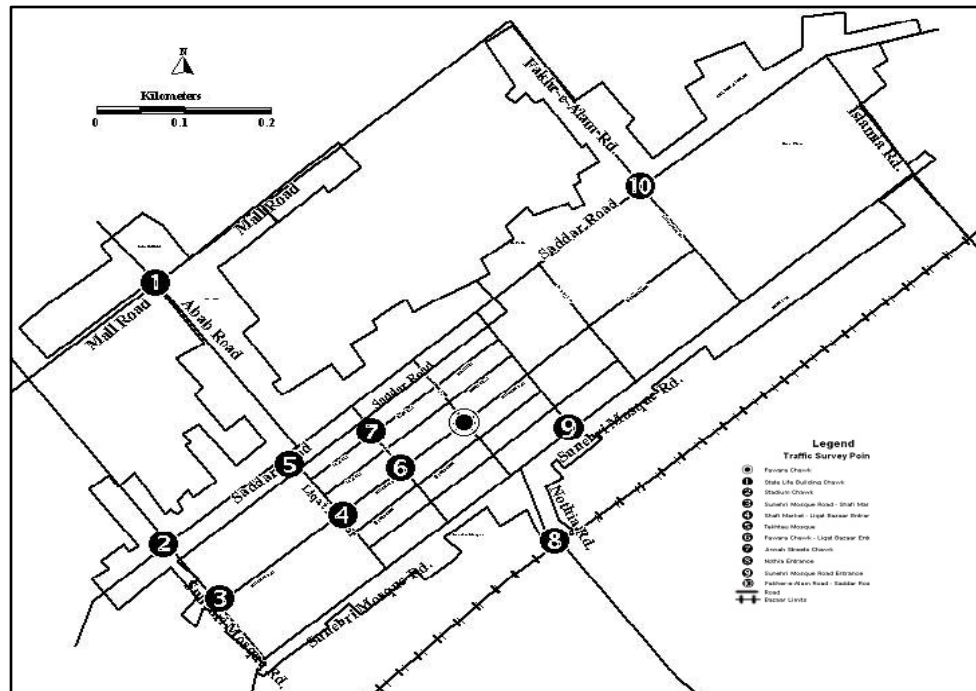
II. Research Methodology

The research methodology of the study of impacts of land use dynamics and accessibility on bid rent system in the central business district of Peshawar is consisted of four major steps. These steps included of land use survey, accessibility survey, open market valuation survey, and data analysis. The CBD of Peshawar is divided into twenty different regions of commercial activities based on accessibility. The extensive land use survey was conducted through profile method. The CBD of Peshawar is mapped in which each block or buildings were surveyed and their specific land use is recorded. The central business (CB) uses were recorded in detail for their all floor land uses while non-CB uses were direct recorded on a base map. More than 700 blocks or buildings were surveyed and their land use data was collected. The base floor area was calculated and compared with the base map area which provides more accurate assessment. The type of commercial activity, size & design of a building, parking facility, and street width & accessibility problems are recorded in detail profile of all buildings. All of these variables data are converted into averages and assigned to twenty bazaars area in ArcGIS.

In second step, the open market data about land and rent values were collected from shop keepers, shop owners, property dealers and land agents in the CB of Peshawar.

All the collected data of land and rent values were converted to averages for each of the bazaars. In third step, the traffic flow of vehicular and pedestrian count was made through camera recordings. All the entrance and central points in the CBD were selected for this survey. The vehicular and pedestrian count survey was carried out at ten-entrance point in Saddar Bazaar (Figure 01). At the average 30-minute traffic flow is recorded on particular entrance or central point at the rush hours in the CBD while weekend and holyday rushare avoided. The survey time is converted to 5 minutes averages.

Figure 1: Traffic Survey points in the CBD of Peshawar



Source: Field Data, 2016

The land use dynamics variables for the assessment of the impacts on bid rent system are: type of commercial activity, size & design of a building, parking facility, and street width & accessibility problems. The hierarchy of commercial activities is discussed in Table 01 with detail. The accessibility is assessed with the variables of vehicular flow, pedestrian flow and vertical access. The vertical accessibility is assessed through higher number of floors visited by customers in specific building. The averages of each variables are calculated. All these conditioned were summarized and the values in different forms are normalized (Equation 01). The positive conditions are normalized from 01 to 10 with Equation 01a and negative conditions like land use problems are also normalized from 01 to 10 with Equation 01b.

$$X_{New} = \frac{x - \mu}{\sigma} \dots \text{(Equation 01)}$$

Or

$$X_{New} = \frac{x - x_{Min.}}{x_{Max.} - x_{Min.}}$$

Whereas μ represents the mean value of the variable, σ is the standard deviation between different values of the variable, x_{Min} is the minimum value of the variable and x_{Max} is the maximum recorded value of the variable.

$$r_{ij} = a + \frac{x_{ij} - \min \{x_{ij}\}}{\max \{x_{ij}\} - \min \{x_{ij}\}} (b - a) \quad \dots \text{(Eq. 01a)}$$

$$r_{ij} = a + \frac{\max \{x_{ij}\} - x_{ij}}{\max \{x_{ij}\} - \min \{x_{ij}\}} (b - a) \quad \dots \text{(Eq. 01b)}$$

For indirect functional relationship among the variables (negative domain), equation “1a” was used, while for variables having direct functional relationship (positive domain), equation “1b” was used. All the variables were converted to a common index for assessment of the impacts of land use dynamics and accessibility on the bid rent system with equal weightage (Equation 02).

$$\text{Index} = \frac{\left[\text{Indicator}_i / \sum_{R=1}^n \text{Indicator}_i + \dots + \text{Indicator}_j / \sum_{R=1}^n \text{Indicator}_j \right]}{\text{Total Weig}_{R=1} \dots} \text{(Eq. 02)}$$

Whereas, R refers to commercial region in consideration (1, 2... n) and Indicators (i ... j) are the various indicators used. The dimension of an index of each indicator is calculated for a Region (R1) by using the formula;

$$= (\text{Actual R1} - \text{Minimum R1}) / (\text{Maximum R1} - \text{Minimum R1}) \dots \text{(Eq. 03)}$$

The average index for each of the seven indicators i.e. type of commercial activity, size & design of a building, parking facility, street width & accessibility problems, vehicular flow, pedestrian flow and vertical access is calculated for the bid rent system by taking a simple average of the indicators in each category. The regions are categorised and/or ranked by Patnaik & Narayan formula (Equation 04). The Cantonment Board Peshawar (CBP) office provided the data about rent and land values of the commercial units under their controls. The latest data of Inland Revenue of the district Peshawar is obtained from the Federal Board of Revenue (FBR) Pakistan (Government of Pakistan, 2016). The open market data about the rent and land values is collected from property dealers and shop owners through field survey. All the collected data of twenty regions was converted to averages and then normalized through Equation 01. The normalized data of each of the four indicators were converted to average bid rent table. The association of calculated bid rent with impacts variables and the existing bid rent of land and rent values is analysed through statistical regression model (Equation 05). The results of regression analysis were further verified through scattered graph method.

$$\text{Bid Rent Index} = \left[\sum_{j=1}^n (\text{Average Index})^\alpha \right]^{1/\alpha} / n \quad \dots (\text{Eq. 04})$$

In the average index of the variables, α is the variable and n represent the total no. of variables j = Number of indicators in each category (in the present case $n = \alpha = 7$)

$$y = \alpha + \beta x \quad \dots (\text{Eq. 05})$$

Whereas: y is a dependent and x is independent variable which describes a line with slope β and y intercept α . The equation may be simplified for simple linear regression analysis (Equation 05a)

$$r_{xy} = \frac{\overline{xy} - \bar{x}\bar{y}}{\sqrt{(\overline{x^2} - \bar{x}^2)(\overline{y^2} - \bar{y}^2)}} \quad \dots (\text{Eq. 05a})$$

Whereas: r_{xy} is the slope of the regression line of the standardized data points.

III. Land Use Dynamics and Commercial Activities

The land uses in the general bid rent theory and commercial land uses in the CBD follow similar pattern. The high-class retailing activities are concentrated in the core area of CBD where accessibility and bid rent at their highest. The commercial land uses are further modified by the size of plot, location in a street, front size, building size, construction, design and decoration etc. These factors on the hand modified the nature of commercial activities on the hand it creates land uses problems which inversely affected the bid rent arrangement in the CBD of Peshawar.

Based on the bid rent hierarchy, CB uses can be classified as retailing, services, offices and special group of economic activities. The highest vehicular and pedestrian flow in CBD is mainly due to retailing activity which shapes its land uses. Retailing is the most prior activity for any high bid rent in a location. The non-CB uses are those activities and uses which mostly has non-profitable nature or least support the growth of CBD. It included wholesaling, manufacturing, residential, government, public, industrial, vacant lots and buildings which occupied low bid rent areas in the CBD (Table 01). The CBP is responsible for tax collection and general look after of the CDB of Peshawar. The building use and new developmental activities are directly controlled by government taxation policy. Different land use problems are directly related with taxation system (Table 02). Lacking of any planning or zoning policy the unplanned growth not only creates the land use problems but also affects the aesthetic beauty of CBD (Khan & Ali, 2010).

Table 1: Commercial Land Uses in the CBD of Peshawar

Major	Sub Groups	Details
Retailing	Fashion Commodities	Perfume, Gift, Cosmetics, Kids, Barber, Beauty parlour etc.
	Jewellery shops	Goldsmith, Ornamental, and small Jewellery shops
	Shoes Shops	Company shops, Mixed shops, Cobbler, and Plastic Commodities shops.
	Cloths' shops	Company shops, Markets Areas and individual shops and stalls. Greatest in number in the CBD.
	Food Shops	Fast foods, Ice-cream parlour, Restaurants, Bakeries, Dry fruit, Butcher, Poultry, and Fruits & vegetables.
	Electronics Shops	Mobile phones, Tablets, Video Gaming, Computers, LED & LCD, and other Electronic appliances shops.

Services & Offices	Miscellaneous Activity	Super general stores, Books and stationary shops, Medicine, Antique, Household-wares, and Mixed activity shops.
	GPO, PIA, Stat Bank and Banks	The PIA booking office, GPO, PIA, and Regional Branch of Stat Bank are special features of the CBD of Peshawar.
	Hotels, Multi-National Companies (MNCs), Lawyers, Medical etc.	Hotels; Architects, Programming and Medical Consultants Pharmaceuticals, electronic, and MNCs of general items.
	Automobiles	Selling of new cars, bargains, and repair services
	Miscellaneous Services	Photo-labs, Private Parking, Courier, Artists, and Cartographers Services
	Repair and Maintenance Services	Electronic appliances & computers, watch-makers, lock-makers, cobblers' shops etc.
	Government / Public	Wapda / PESCO, Colleges, Schools, Hospitals, Community Centres etc.
	Special Categories	Printing Press, Furniture Tailors and Money Changers etc.
Non-CB Uses	Residential	Individuals, Flats, Houses
	Manufacturing	Clothes, Shoes, Furniture, Beverages, Bags, tents and other related things
	Wholesaling & Commercial Storage	Metallurgy work and Electric Appliances Business
	Vacant Plots & Buildings	Development, Reconstruction and mostly Legal issues

Source: Field Data, 2016

Table 2: Land Uses Problems in the CBD of Peshawar

Problems	Details & Location
Un-planned Growth	Improper vertical height buildings on Saddar road, Sunheri mosque road, and Fakher-e-Alam road; Improper horizontal growth in surroundings of State life building on Mall road and around Sunheri mosque
Building Structures	The Tarpal shops in Shafi market and old residential blocks on Tipu Sultan road
Building Size and Heights	Buildings on Tipu Sultan; In between two large plazas small buildings on Saddar road. Seismically, very dangerous.
Building Extension	Saddar Road big plaza cover the front area and make less accessible backward areas. In Jinnah streets and other small bazaars buildings' walls, stairs and balconies are extended toward streets
Improper Utilization of Land	Public buildings are scattered in the transitional zone of the CBD.
Lack of Zoning	Buildings are in dual uses for tax exemption. The big plazas on Tipu Sultan and Jinnah streets and small buildings on Saddar road.
Parking and Traffic Congestion	Vehicular traffic congestions on Saddar road and Sunehri Mosque road while pedestrian congestion in Jinnah streets.
Land Exploitation	Residential blocks in Jinnah Street, Sunehri mosque road and Fawara chawk area
Un-sustainable Growth and Development	construction of small shops and plaza near huge plazas e.g. Tarpal shops around Shafi market and Dean's commercial center on Islamia road.
Environmental Problems	Poor cooling vehicles, human and mechanical activities in the CBD
Aesthetic Beauty	Mostly, bazaars are mixed in types of buildings design and commercial activities.

Source: Field Data, 2016

IV. Accessibility and Commercial Activities

The CBD of Peshawar is the most accessible area of the city (Ali et al., 2018; Khan & Ali, 2010). The accessibility has two major types in in the CBD of Peshawar i.e. horizontal and vertical accessibility. The horizontal accessibility is described in the form

of vehicular and pedestrian flow. The Saddar and Mall roads having the width of 70 foot. Rest of the roads in CBD had the width of 50 foot while Jinnah and Holy streets had width of 20 foot. The Stadium Chawk and Nothia stop is main entrance points for pedestrian. The central location of the Saddar road in the CBD and highest number of vehicular and pedestrian flow make it backbone of the CBD. The vehicular flow is concentrated in Saddar, Mall and Faher-e-Alam roads. The pedestrian flow is concentrated in Liqat bazaar, Tipu Sultan roads and Jinnah streets (Table 03 & Figure 02).

The vertical accessibility is dependent on the size of building, frontal space of a building, stairs & lift system, and location of the building in a bazaar. The backwards sides of plazas shops, the upper portions of buildings with small or sideway stairs and inner portions of small plazas are lesser accessible for pedestrian which directly influence business, land values rent values, and even nature of commercial activities. It was observed that the new plazas e.g. Deans Shopping Centre having proper lift system attract the customers to the upper floors. However, the number of visitors is far below than ground shops. The brand shops concentrated in plazas which have open space and stairs system, the customers visited the basements and second floors. Similarly, the electronic shops in Bilour Plaza where customers gender is predominantly male, the basement and upper floors are visited by customers. In general, the upper portion of all buildings are used for residential, commercial storage, and offices.

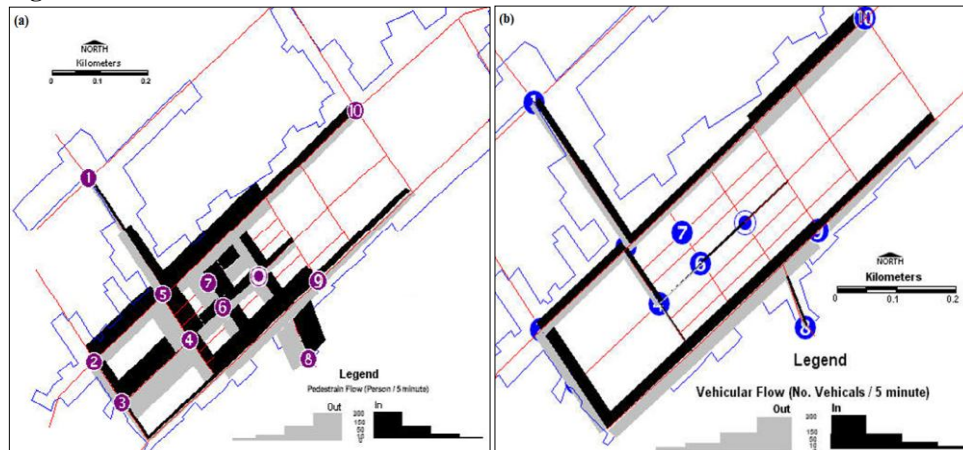
Table 3: Vehicular and Pedestrian Flow in the CBD of Peshawar

Location	Name	Status	Pedestrian	Vehicular
1	Arbab Road - Mall Road	In	16	75
1	Arbab Road - Mall Road	Out	17	65
2	Saddar Road - Stadium Road	In	212	85
2	Saddar Road - Stadium Road	Out	130	82
2	Stadium Chawk - Sunehri M. Rd.	In	115	125
2	Stadium Chawk - Sunehri M. Rd.	Out	116	110
2	Stadium Chawk - Stadium Road.	In	180	130
2	Stadium Chawk - Stadium Road.	Out	110	90
3	Tipu Sultan Rd. - Sunehri M. Rd.	In	145	0
3	Tipu Sultan Rd. - Sunehri M. Rd.	Out	150	0
4	Tipu Sultan Rd. - Sunehri M. Rd.	In	255	25
4	Tipu Sultan Rd. - Sunehri M. Rd.	Out	266	22
4	Tipu Sultan Rd. - Fawara Chawk	In	156	24
4	Tipu Sultan Rd. - Fawara Chawk	Out	168	15
4	Tipu Sultan Rd. - Kabari Bazaar	In	135	36
4	Tipu Sultan Rd. - Kabari Bazaar	Out	150	42
4	Tipu Sultan Rd. - Liqat Bazaar	In	230	50
4	Tipu Sultan Rd. - Liqat Bazaar	Out	235	55
5	Liqat Bazaar - Saddar Road	In	248	52
5	Liqat Bazaar - Saddar Road	Out	240	56
5	Arbab Road - Saddar Road	In	125	85
5	Arbab Road - Saddar Road	Out	115	75
5	Saddar Road - Arbab Road	In	215	90
5	Saddar Road - Arbab Road	Out	135	122
6	Tipu Sultan Rd. - Fawara Chawk	In	110	22
6	Tipu Sultan Rd. - Fawara Chawk	Out	100	0
6	Tipu Sultan Rd. - Liqat Bazaar	In	132	21
6	Tipu Sultan Rd. - Liqat Bazaar	Out	132	0

6	Tipu Sultan Rd. - Jinnah Street	In	175	0
6	Tipu Sultan Rd. - Jinnah Street	Out	110	0
6	Tipu Sultan Rd. - Kabari Bazaar	In	112	0
6	Tipu Sultan Rd. - Kabari Bazaar	Out	178	0
7	Jinnah Street - Tipu Sultan Rd.	In	152	0
7	Jinnah Street - Tipu Sultan Rd.	Out	142	0
7	Jinnah Street - Saddar Road	In	220	0
7	Jinnah Street - Saddar Road	Out	225	0
7	Jinnah Street - Liqat Bazaar	In	100	0
7	Jinnah Street - Liqat Bazaar	Out	105	0
7	Jinnah Street - Holy Street	In	155	0
7	Jinnah Street - Holy Street	Out	150	0
8	Sunehri M. Rd. - Nothia	In	230	22
8	Sunehri M. Rd. - Nothia	Out	220	26
9	Sunehri M. Rd. - Nothia (Stop)	In	260	125
9	Sunehri M. Rd. - Nothia (Stop)	Out	150	130
10	Saddar Road - F. Alam Road	In	150	105
10	Saddar Road - F. Alam Road	Out	165	125

Source: Field Data, 2016

Figure 2: Vehicular and Pedestrian Flow in the CBD of Peshawar



Source: Field Data, 2016

V. Implications on the Bid Rent System in the CBD

The CBD of Peshawar is consisted of different bazaars and/or regions which has specific characteristics that shaped the bid rent system in the CBD of Peshawar. The indicators of the land use dynamics and accessibility shows the pattern of spatial arrangement in these bazaars. The indicator which has positive impacts are: commercial activity, building's size & design parking facility, vehicular flow, pedestrian flow and vertical access. The indicators with negative impacts are street width and accessibility problems. These values are quantified through Patnaik & Narayan formula method by using Equation 02 & 03. The ranked values for each of the bazaar is calculated by using Equation 04. Almost same hierarchical arrangement is shown in their spatial arrangement of all indicators in these bazaars (Table 04).

Table 4: Quantified and Ranked Values of Selected Indictors in the CBD

S. No.	Region	Commercial Activity	Building's Size Design	Parking Facility	Street Width Accessibility Problems	Vehicular Flow	Pedestrian Flow	Vertical Access	Index Average	Rank
1	Mall Road	0.67	1.00	1.00	1.00	1.00	0.38	0.71	0.82	2
2	Arbab Road	0.67	0.67	0.63	0.75	0.88	0.75	0.71	0.72	3
3	Stadium Chawk	0.33	0.17	0.63	0.63	0.63	0.13	0.00	0.36	12
4	Saddar Road	1.00	0.83	0.88	0.88	0.88	0.88	1.00	0.90	1
5	Liqat Bazaar	1.00	0.67	0.00	0.38	0.00	1.00	0.86	0.56	4
6	Shafi Market	1.00	0.67	0.00	0.38	0.00	1.00	0.86	0.56	4
7	Landa Bazaar	0.33	0.33	0.00	0.00	0.00	0.63	0.14	0.20	15
8	Tipu Sultan Bazaar	0.67	0.67	0.25	0.38	0.25	1.00	0.57	0.54	6
9	Fawara Chawk	0.67	0.33	0.13	0.63	0.38	0.75	0.14	0.43	10
10	Jinnah Streets	0.83	0.00	0.00	0.00	0.00	1.00	0.71	0.36	11
11	Holy Street	0.83	0.00	0.50	0.50	0.38	0.00	0.00	0.32	13
12	Library Street	0.00	0.00	0.50	0.50	0.38	0.00	0.00	0.20	17
13	Hali Street	0.00	0.00	0.50	0.50	0.38	0.00	0.00	0.20	17
14	Kabari Bazaar	0.33	0.00	0.00	0.13	0.00	0.63	0.14	0.18	20
15	Jami Street	0.00	0.00	0.50	0.50	0.38	0.00	0.00	0.20	17
16	Faizullah Khan Street	0.17	0.00	0.25	0.25	0.00	0.63	0.14	0.20	15
17	GPO Lane	0.50	0.33	0.25	0.25	0.25	0.25	0.14	0.28	14
18	Fakher-e-Alam Road	0.50	0.50	0.63	0.63	0.75	0.13	0.43	0.51	7
19	Sunehri Mosque Road	0.50	0.33	0.50	0.50	0.88	0.38	0.43	0.50	8
20	FC Chawk	0.33	0.83	0.25	0.75	0.75	0.00	0.57	0.50	9

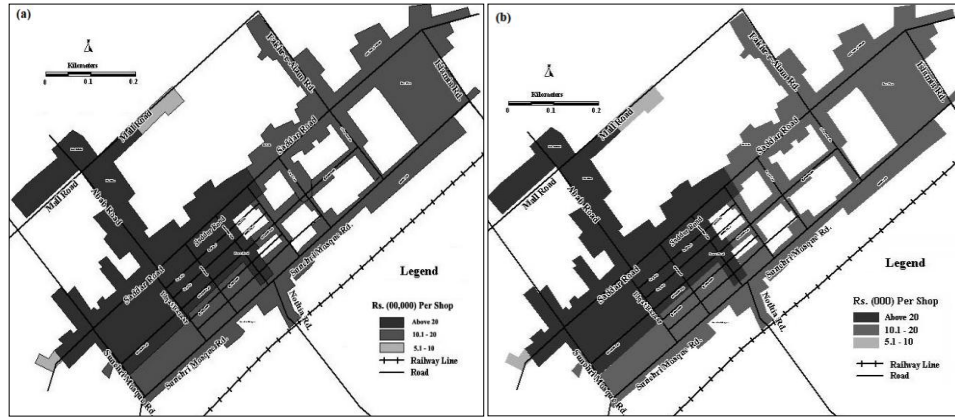
Source: Field Data, 2016

This land valuation system is the combination of Government operated agencies and private sector. The recent most land valuation table (Immoveable Property) of the FBR Pakistan directly controlled the land values system. The data about land and rent values from CBP provide a generalized picture of the existing bid rent system in the CBD. The open market data about rent and land values is the combined picture of all factors influencing the bid rent system in the CBD of Peshawar (Figure 04). These four basic indicators of the bid rent system are analysed in the same fashion like previous indicators. First, each indicator data is normalized and converted to average index values and ranking in each bazaar areas (Table 05).

The dual use of buildings is the product of Government taxation system The open land and rent market are more dynamic and changed with taxation policy, developmental activities and customers pattern. The land use dynamics and accessibility modified this bid rent system in the CBD of Peshawar. The results of the existing land valuation system and impacts studies are compared by using linear regression model. The results of impacts are treated as dependent or interceptor while existing land valuation system as independent or predictor. The Regression Statistics are: Multiple R 0.90; R Square 0.81; Adjusted R Square 0.80; Standard Error 0.10; and Observations 20. This rectification process prove that a strong association is present in the results of both methods. The values of scattered graph and Coefficients i.e. Intercept 0.08 & X Variable

1 0.64 are the same which shows the accuracy of the overall process of regression analysis (Figure 04).

Figure 3: Open Market Land and Rent Values in the CBD of Peshawar



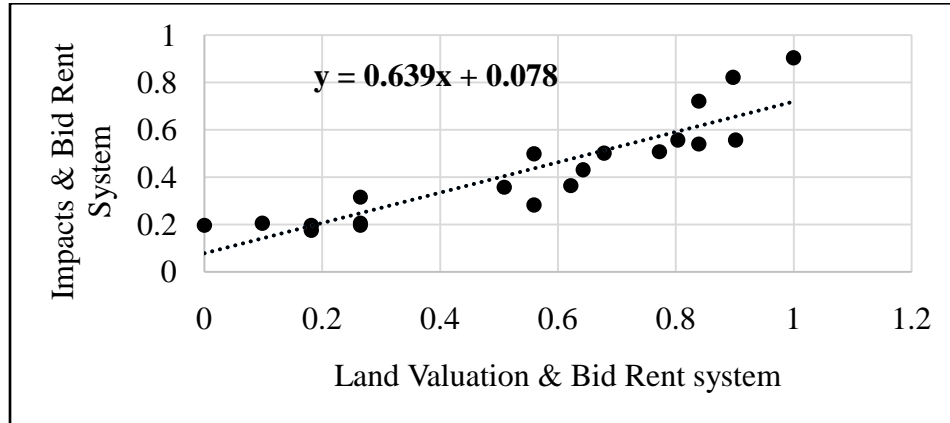
Source: Field Data, 2016

Table 5: Quantified and Ranked Values of Government and Private Sector in the CBD

S. No.	Region	FBR Land Valuation	CB Valuation	Open Market Rent Values	Open Market Land Values	Average Index	Rank
1	Mall Road	1.00	0.71	0.88	1.00	0.90	3
2	Arbab Road	1.00	0.86	0.75	0.75	0.84	4
3	Stadium Chawk	1.00	0.29	0.38	0.38	0.51	13
4	Saddar Road	1.00	1.00	1.00	1.00	1.00	1
5	Liqat Bazaar	1.00	0.86	0.88	0.88	0.90	2
6	Shafi Market	1.00	0.71	0.75	0.75	0.80	6
7	Landa Bazaar	0.67	0.14	0.13	0.13	0.26	14
8	Tipu Sultan Bazaar	1.00	0.86	0.75	0.75	0.84	4
9	Fawara Chawk	1.00	0.57	0.50	0.50	0.64	9
10	Jinnah Streets	0.67	0.57	0.63	0.63	0.62	10
11	Holy Street	0.67	0.14	0.13	0.13	0.26	14
12	Library Street	0.67	0.14	0.13	0.13	0.26	14
13	Hali Street	0.33	0.14	0.13	0.13	0.18	17
14	Kabari Bazaar	0.33	0.14	0.13	0.13	0.18	17
15	Jami Street	0.00	0.00	0.00	0.00	0.00	20
16	Faizullah Khan Street	0.00	0.14	0.13	0.13	0.10	19
17	GPO Lane	0.67	0.57	0.50	0.50	0.56	11
18	Fakher-e-Alam Road	1.00	0.71	0.63	0.75	0.77	7
19	Sunehri Mosque Road	1.00	0.71	0.50	0.50	0.68	8
20	FC Chawk	0.67	0.57	0.50	0.50	0.56	11

Source: Field Data, 2016

Figure 4: Association of the Results of the two Bid Rent System in the CBD of Peshawar



Source: Field Data, 2016

VI. Conclusion

The CBD of Peshawar has complex land use structure and the high-profile retailing activities like fashion commodities, gold & ornaments shops occupied the highest bid rent areas in the CBD. The second higher bid rent areas consisted of multi-stories buildings where vertical accessibility can facilitate the customers. All three type of accessibility i.e. vehicular, pedestrian and vertical has direct impacts on the bid rent system. The Saddar & Mall roads were the highest bid rent areas which had all three type of accessibility with the least land use problems. The Arbab and Fakher roads areas had land use problems with three type of accessibility and thus occupied the higher bid rent areas. Tipu Sultan, Liaqat bazaar, Shafi market and Jinnah streets also occupied the higher bid rent areas due to highest pedestrian flow although vehicular accessibility is negligible. The Sunheri mosque road has traffic congestion problems and rest of other bazaars has the least vertical accessibility with lower order of commercial activities. Consequently, their score in bid rent is also very low.

The comparison of existing land valuation system and calculated impacts on the bid rents system highlighted that the modification occurred in the bid rent system of the CBD of Peshawar. The existing land valuation system assigned the higher bid rent values to Fakher-e-Alam and Sunheri mosque roads which has lower values in the calculated bid rents system as their profile/level of commercial activities is lower and land use problems delimits their growth potential for the CBD. Similarly, the Arbab road, Liaqat Bazaar, Shafi Market has the same weightage in the existing bid rent system while the calculated bid rent system highlighted the problems of buildings designs, vehicular flow and vertical accessibility, respectively, which lower their rank in the bid rent system. The existing bid rent system has no values for dual uses while the calculated impacts on the bid rent system incorporated this issue, comprehensively. In nutshell, the present study provides more dynamic system for bid rent analysis which incorporate those factors which controlled and modified the growth & development of the CBD of Peshawar. The present study will enhance the capacity of line agencies, private sectors and researcher to guideline the ongoing developmental process towards sustainable economic growth.

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