

MODERNIZING CIVIC INFRASTRUCTURE AND QUALITY OF SERVICES THROUGH PUBLIC PRIVATE PARTICIPATION IN MIRA BHAYANDER MUNICIPAL CORPORATION (MBMC), INDIA

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Abstract: Mira Bhayander Municipal Corporation is fastest growing municipal corporation in Mumbai Metropolitan Region. Many people prefer to stay in this corporation due to easy access to Mumbai city and surrounding places, access to entertainment industry. The municipal corporation gets more revenue through hoarding, taxes and permits. The revenue expenditure is positively related mayors' allowance, permanent structures, maintaining and repairing of cremation grounds. The capital expenditure is negatively co related to corporate share and hospitals. The Municipal Corporation of Mira Bhayander must raise tax on property and entertainment tax and permits. Municipal Corporation must reduce revenue expenditure on administration, store house. It must increase it on health care, entertainment and gardens. The capital expenditure must be reduced for general administration and it must be increased for gardens and development plan implementation. Municipal corporation must involve private sector in investment and provision of quality civic services to people.

Keywords: Water, sanitation, sewage

1. INTRODUCTION

Reform of urban governance and finance are critical not only to improving the quality of life of the people living in urban areas but also to ensure that cities, and especially the large metropolitan areas, become the drivers of economic growth in the country. Ensuring adequate availability of finances and improving governance is an imperative, and the rate at which urbanization is taking place makes it urgent than reform initiatives must be undertaken. If India is to expand its national rate of economic growth significantly, concerted action to reform both urban policies and urban initiatives are required soon (Muniswami Samadri (2018). People living in cities or towns have to deal with the problems of transportation, water availability, sewerage, open spaces, etc. Similarly, now cities across the globe are competing to become environment friendly and investor friendly destinations (Saqib S.2014).

The municipal corporations are providing number of civic services to its population. But population and area of corporations are increasing fast. The finance of municipal bodies are poor; a majority of them are not able to raise adequate resources from their own sources to meet increasing expenditure on services. On the whole, the status of municipal finance in India suggests that the present revenues are insufficient to meet the growing expenditure needs of urban areas and the local municipal bodies are in a state of constant financial stress (Matari Siddaram and Bharadi 2017). The municipal corporation in Mumbai Metropolitan Corporation is not exceptional to this phenomena.

Mira Bhayander is located 20 kilometers to North of Mumbai city. Mira Bhayander developed into residential locality because of its proximity to Mumbai city, low cost housing, sea beaches, peace and good climate and environment as well as open spaces. In terms of population, Mira Bhayander has emerged as the fastest growing suburb in Mumbai Metropolitan Region. Due to easy mode of transport facilities, people are shifting to Mira Bhayander. Many malls, banks, restaurants, showrooms located in corporation area. The Gorai and Manori are most popular beaches in Mira Bhayander Municipal Corporation. Many people visit these beaches regularly and during weekends. The Ghodbunder fort was established in Maratha era which is most visited

historic place in corporation. Another historic place is Bhayander fort which was established by Peshwas. The Essel world is special attraction and modern fun to people and children across country. It is an international style theme and modern amusement park. It is situated on 64 acres near Gorai village in Corporation area. Over the period of time, urbanization is growing very fast in corporation area.

People from rural and urban area are migrating in Mira Bhayander Municipal Corporation area. Municipal corporation has not adequately invested in infrastructure, entertainment, beaches. The poor are not able to find the adequate and affordable housing and space in city. Due to rising population, there is tremendous pressure on amenities. With increasing in population, there is increasing pressure on land and other resources, increasing demand for services and amenities and infrastructure (Khatua S.2019). Those poor people migrating from rural area for work, do not find adequate and affordable housing. Therefore poor people prefer to live in slums. The slums are proliferating in different wards of corporation area. Due to unplanned constructions, the provision of basic facilities such as water supply, sanitation, health care, sewage became difficult for corporation. The slums are growing continuously without infrastructure facilities.

Every house must have 24*7 safe water supply with adequate quantity. But population is growing and the availability drinking water is inadequate. The inadequate water supply forcing people to store water in tanks and drums. An inadequate water forcing women and children to carry water from long distance. Children and women are spending their valuable energy and time for carrying water. It also affects on children's educational achievement.

Municipal Corporation is expected to collect entire solid waste and carry it to dumping grounds. Solid waste is collected only from few developed pockets. Most of the area remained without solid waste collection. Many people throw solid waste on road and in water. In slums, solid waste collection system of corporation is not exist. Those visit the sea beaches often throw sewage on beaches. It goes in seawater and during high tide, the same solid waste comes back on beaches. Municipal corporation do not collect sewage on regular basis at beaches. An uncollected sewage creates water, soil and air pollution. It affects on health of people in corporation area. Health care facilities are inadequate with rising population in corporation. Poor people visit to health care facilities but quality care is not available. Lack of space, health specialist, long queue and lack of medicines are the issues with health care facilities. Quality health care facilities are available in Mumbai city. The poor need to travel through local trains, buses and spend time, money for quality health care. The regular visits cannot be possible to health care facilities which are far away from home. They are often more crowded with loner queue for health care. The poor people do not visit again and again to health care facilities in Mumbai. Most of the time, they skip health care visits and treatment. As the population has increased in corporation, the use of drinking water has also increased. Therefore, the sewage has also increased. Municipal Corporation has piped sewage collection system in few developed area. Sewage system for entire corporation area is inadequate, traditional and not scientifically developed. Due to nearness of Arabian Sea, sewage is sent directly to sea. Whole sewage must be collected and treated by corporation and then it should be sent to sea water. But sewage treatment plants are not constructed for collection of sewage water. Few sewage treatment plants are not working properly. Therefore, the public services are not provided adequately and it is affecting on quality of life of people in corporation.

The objective of the paper is to understand the quality of services provided by the municipal corporation. The second objective of the study is to investigate the growth in revenue/capital receipts and payment. At the last, study aims to suggest measures to increase the investment in public services provided to its population.

2. DATA AND METHODOLOGY

The annual data of budgets from 2015-20 is collected from Mira Bhayander Municipal Corporation (MBMC). The website of MBMC provides detail of annual budgets. We collected secondary data from reports, newspapers and magazines. We visited number of times to different area of Municipal corporation and collected primary data of water supply, sanitation, markets and infrastructure. We collected the budgets information in PDF format and converted information into excel files. We have used SPSS and R software to analyse data. We have used CAGR method to calculate growth of revenue/ capital receipts and expenditure from 2015-2020 period. We have also used the CAGR method to calculate the growth rate of sub categories of receipts and

payment of the municipal corporation from 2015-20. Appendix 1 provides the details of CAGR method used for this study.

Econometric model:

We have developed an econometric model for surplus or deficit budgets of Municipal corporation of Mira Bhayander. The budgets surplus or deficit is depending on current gap in revenue receipts and expenditure as well as capital receipts and expenditure for Mira Bhayander Municipal Corporation. The previous balance in budget is also important in current budget.

$$B_i = \sum_{t=1}^n (D/S) + PB \tag{1}$$

B_t means budget of corporation in i^{th} period. The budget is either surplus or deficit in particular time period or current financial year. PB means previous balance or past year's balance of corporation budget and it is added in the current period.

$$\sum_{t=1}^n B(D/S) = \sum [(RR - RE) + (CR - CE)] + PB \tag{2}$$

The deficit or surplus in the corporation's budget in particular time period t or year depends up on the gap in Revenue Receipts (RR) and Revenue Expenditure (RE) plus Capital Receipts (CR) and Capital Expenditure (CE). The Previous Balance (PB) is added in it. We have further explained the revenue receipts of corporation in particular time period as follows.

$$\sum_{t=1}^n RR = (TML + MPT + A + TP + G + M) \tag{3}$$

RR means revenue receipts for corporation and it is depending on number of factors. TML defined as Tax of municipal corporation on land and building, Municipal property receipts/Tax. Architecture is defined as A and G means Total permits of corporation and revenue received from it. Grants received is G for corporation. The mixed category is defined as M in above equation.

$$\sum_{t=1}^n CR = (SCF + PS + CH + BOT + G + HBDS) \tag{4}$$

CR means capital receipts of Mira Bhayander Municipal Corporation. The study center fees is defined as SCF. The PS is permission stall by corporation. In capital receipts, City hall is CH, BOT is built operate and transfer, Ground/ Chow patty is G. The hospitals blood donation space is HBDS.

$$\sum_{t=1}^n RE = (AE + AS + GST + TE + SHS + PS + HF + MTH + CG + ES + GS + C) \tag{5}$$

RE means revenue expenditure of corporation. Administrative expenditure is written as AE. The Architecture section is AS. GST of corporation is Goods and Services Taxes. Tax expenditure of corporation is TE. The Store house section defined as SHS. Permission section of corporation is PS. Health facilities with corporation is noted as HF. It includes as Hospital's and dispensaries, Veterinary section of corporation. MTH means Markets/Pin fold, Town hall and meeting house. The Cremation ground with corporation is CG. , Encroachment section defined as ES. Gardens section in municipal corporation is GS. Construction in corporation is defined as C.

$$\sum_{i=1}^n \text{RE} = (\text{CE} = \text{AE} + \text{CS} + \text{HE} + \text{GS} + \text{C} + \text{M} + \text{SH} + \text{PW} + \text{DPI} + \text{A} + \text{NE}) \quad (6)$$

CE means capital expenditure of Municipal corporation of Mira Bhayander. Administrative expenditure of corporation is AE. Computer section related capital expenditure is CS. Health care is HE and it covers the Hospitals and dispensaries of corporation. Gardens section is GS. Crematory related revenue expenditure in the corporation is defined as C. Market and slaughter house related expenditure is M. Public work of corporation is PW. Development plan implementation of corporation is DPI in above equation. Architecture is A and New electricity work related expenditure is (NE).

3. HISTORY OF MIRA BHAYANDER MUNICIPAL CORPORATION

Before 1980, the villages near Bhayander were scattered and there was no connectivity with each other. On 12th June 1985, five Gram panchayat's such as Bhayander, Kashi, Mira, Navghar and Ghodbunder were integrated to establish Mira Bhayandar Municipal Council. Population and connectivity was growing in council. In 1990 the Council got extended by including another 4 Gram panchayat's that is Chena, Varsova, Rai-Murdhe, Dongri and Uttan. Population in 1971 was only 0.33 lakh. But city witnessed as growth of urbanization. In 1981, population was recorded as 0.67 lakh. It means population became double within a decade. An industrial, retail activities grown with high level of migration in council. In 1991, population of city was observed as 1.75 lakh. In 2001, population of corporation was observed as 5.20 lakh. The road infrastructure was inadequate with rising population.

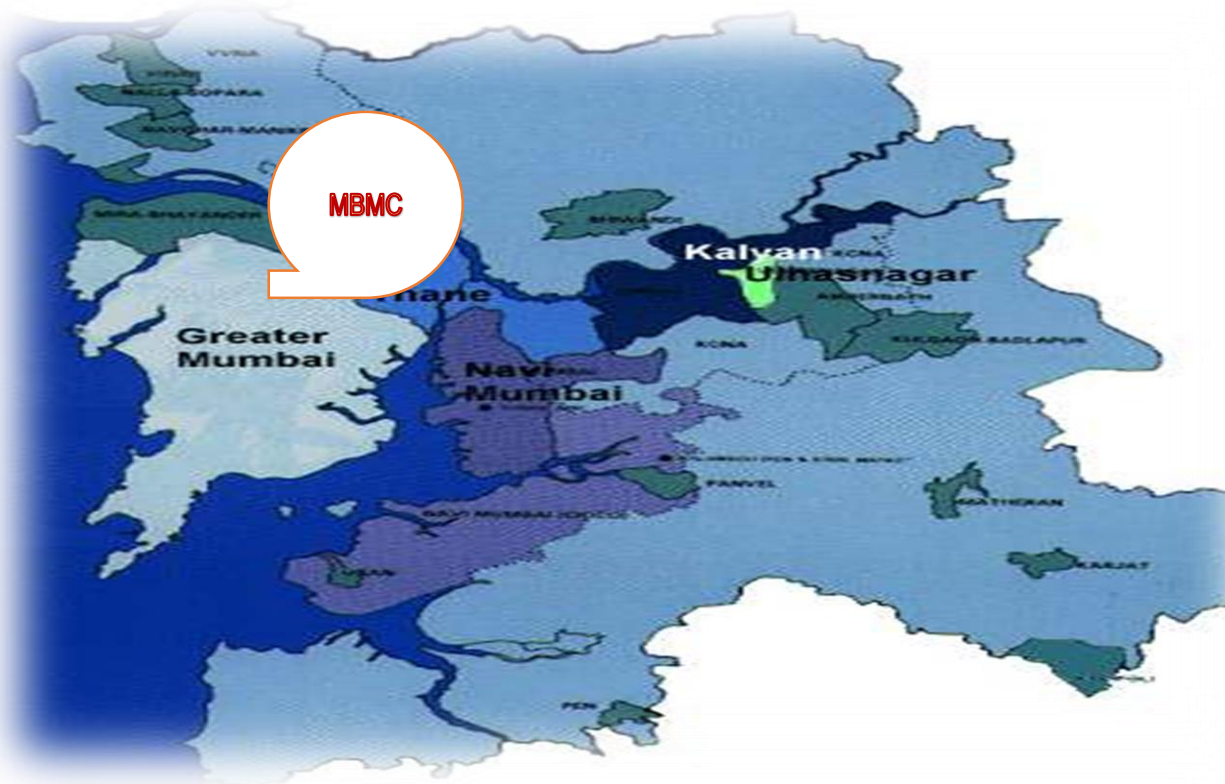


FIGURE 1. MAP OF MIRA BHAYANDER MUNICIPAL CORPORATION (MBMC) IN MMRDA, INDIA

Mira Bhayander Municipal Corporation is divided into two parts as West and East part of city. Western parts of city is known for city with traditional residents. The Eastern part of city has industrial activities. Many old industries are located in Eastern part of city. Salt pans and marshy land in at West side of municipal

corporation. Mira Road restricted the South ward spread of Bhayander. Population of Mira Bhayander in 2009 was 900000 in which male were 495000 and female were 405000.

The city is surrounded by big mountains on both the side boundaries along with Arabian Sea guarding the West side of the city. The North side of the city is surrounded by Vasai (Basin) Creek. The Bhayandar city Situated at the heart of the Nature. Being a neighboring city of Mumbai, the growth of the city is very high. The city has managed to kept its originality in small scale industries, farming, fishing, sand and salt cultivation as its major business. The small scale industry situated in Bhayander East. The industrial rank of city in Asia is Third. The Agri and Koli are the original residents of this city. Now there are people of all other religion and castes migrated in city. Therefore city became one of the cosmopolitan center in western area of region.

4. CIVIC SERVICES PROVIDED BY CORPORATION

Municipal Corporation of Mira Bhayander is providing number of civic services to its population but services are inadequate to rising population. Mira Bhayander gets 86 MLD water supply from Shahad Temghar management (STEM). The additional 30 MLD sanctioned water supply for corporation. Water supply from MIDC is 9 MLD for corporation. Total 10 MLD water supply is sanctioned due to rising population. The 86 MLD water supply which is sanctioned by Maharashtra Jeevan Pradhikaran. Another 30 MLD water from MIDC also supported for corporation. Surya dam water supply of 100 MLD is planned for future population growth. Total 213 MLD drinking water is planned from all sources for municipal corporation. Individual water supply is still 2 to 3 hours per day at the rate of 100 liter per capita daily. The existing water supply leakages is 20 per cent. Western railway that is local train service which is the main mode of transport to commuters to Mumbai and Vasai Virar. Mira Bhayander Municipal transportation (MBMT) service started on 15th September 2005. Mira Bhayander is connected through Mira road to Western Express Highway (NH-08). Mira Bhayander transport corporation running buses between Mira Road, Bhayander and surrounding area. BEST provides transportation service in suburbs. The private buses, auto rickshaw provide transportation facilities to commuters with in municipal corporation. Fire brigade of MBMC is alert on 24*7 basis. Fire brigade is working to avoid deaths during accidents and natural calamities. There is fire brigade station at 60 feet road Bhayander (East). Sewage treatment means processing contaminated waste water. In this process, the physical, chemical and biological containment are removed from domestic, industrial and run off water. The Mira Bhayander Municipal Corporation has planned 306 MLD sewage in three phases over the period of time. Due to scarcity of area, municipal corporation of Mira Bhayander has separated sewage as residential, industrial and institutional sewage treatment. The sewage is collected and treated where it is collected. Sewage is created by Residences, Institutions, and Commercial and Industrial establishments. It can be treated close to where it is created or collected and transported via a network of pipes and pump stations to a municipal treatment plant. Sewage collection and treatment is typically subject to local and state regulations and standards. Industrial sources of wastewater often require specialized treatment processes. The raw sewage in Mira Bhayander Municipal Corporation area contains mainly dissolved and suspended organic matters. The treatment facility of municipal corporation mainly involves separation of suspended solids. It is followed by its stabilization, by the action of microorganisms, under anaerobic conditions. The anaerobically digested sludge is disposed off. The clarified sewage emanating from the settling tanks is chlorinated, before being disposed off in the Mira Bhayander Municipal Corporation.

The waste management includes to minimize the health, environmental impacts of solid wastes. Solid waste is generated by domestic, commercial, industrial, healthcare, agricultural activities. Solid waste is thrown at streets and public places is referred as garbage. Municipal solid waste consists of household waste, construction and demolition debris, sanitation residue. This garbage in the corporation is generated mainly from residential and commercial complexes. Household wastes is categorized as hazardous waste. Hospital waste is generated during the diagnosis, treatment, or immunization of human beings. The hospital wastes includes sharps, soiled waste, disposables, anatomical waste, cultures and discarded medicines. These are in the form of disposable syringes, swabs, bandages, body fluids and human excreta. The hospital waste is highly infectious due to COVID-19 situation. If it is not collected, treated and disposed then it is a threat to human health in corporation area. Municipal corporation has heavy congestion on roads in inner area, lack of parking

spaces along the roads in city, near railway station, lack of footpaths of inadequate area. The street hawkers near railway station are causing vehicular traffic problem.

5. REVENUE RECEIPTS OF MIRA BHAYANDER MUNICIPAL CORPORATION

We have calculated the revenue receipts of the corporation from 2015 to 2020 period. The CAGR in terms of per cent is presented in the following table.

TABLE 1. THE MBMC AND REVENUE RECEIPTS (2015-20) (PER CENT)

No	Category	Sub-categories	CAGR
1	Tax of municipal corporation on land and building		
		Property tax	5.25
		Tax on empty land	4.42
		A. Local body tax	-0.94
		B. Mudrank tax grant	6.36
		Entertainment tax	9.32
		Hoardings	13.67
		Pay and park	7.90
		Entertainment tax	8.69
		Pin fold	8.43
		2	Municipal property receipts/Tax
Market fees	6.25		
Road cutting refund	7.14		
Ambulance fees	5.28		
Library fees	5.10		
Encroachment Seized	16.12		
Illegal property demolition	65.67		
Scrap sell/ Vehicle sale	0.46		
Illegal construction	1.22		
Tender and form fees	4.59		
Notice fees	-0.79		
Warrant fees	0.17		
Special transfer fees	6.68		
Other receipts	10.72		
3	Architecture		
		Building permission fees	6.47
		NOC to building	6.21
		Income from TDR	0.57
		House repairing	39.32
		Development plan	13.71
		Basic facility	7.25
4	Total permits		
		Factories/Shops/Hotels/other permits	16.27
5	Grants		

		Road construction and survey	1.00
		Grants from 14th Finance commission	16.33
		Grants for MLA	26.66
		Grants for MP	4.35
		Education Rabit tax	5.10
		Employment guarantee tax rebate	6.04
		Workers welfare tax rebate	3.00
		Court grant	7.47
		TB control grant	2.17
		Routine vaccination grant	3.22
		Minority related grant	1.50
		Clean Maharashtra program grant	3.70
		Other grant	4.64
6	Mixed category		
		Interest on property tax	1.78
		Interest on fixed deposits	2.11
		Health sewage fees/fines	8.06
		Health case papers/OPD fees	1.99
		Late fees charges	1.46
		Government insurance fees	7.58
		Other small deposits	6.73
		Birth death certificate fees/True copy	9.73
		Others deposits	7.85
		Hospitals/Dispensaries permission fees	8.43
		Marriage registration fees	4.26
		Right to information fees	2.48
		Wood supply to cremation area	2.47
		Census (Grant from Govt)	0.12

Source: Calculated from budgets of MBMC

Tax revenue on land and building for municipal corporation comprises as different items. The property tax growth was 5.25 per cent from 2015-20. The growth of tax on empty land was 4.42 per cent. The local body tax for corporation is grown as -0.94 per cent. Mudrank tax grant growth is observed as 6.36 percent.

An entertainment tax has grown with 9.32 percent in the study period. The revenue from hoarding has increased as 13.67 per cent for corporation. The pay and park related revenue receipts increased very fast for corporation (7.90 percent). The growth of tax from pin fold is observed as 8.43 percent. The municipal property receipts comprises as different items. The market fees has grown as 6.25 per cent from 2015-20. Road cutting refund is observed as 7.14 per cent for corporation. Many corporator and individuals are cutting public roads for water supply, sanitation and sewage lines. Municipal corporation charge them for such activities. The growth of an ambulance fees is observed as 5.28 per cent. Municipal corporation provides ambulance services to its population. It charges for such service from people. Similarly, the libraries are established in corporation area. The library fees growth is observed as 5.10 per cent. Encroachment sized is observed as 16.12 per cent. Many people encroach on public property and build houses. Municipal corporation puts fines on such activities and demolishes their houses. An illegal property related demolition has grown in city. The growth of fines and charges increased with 65.67 per cent from 2015-20. The scrap sell/vehicle sale has grown with only 0.46 per

cent over the period of time. The revenue receipts from illegal constructions in city has grown with 1.22 per cent. The tender and form fees has grown as with 4.59 per cent. Notice fees has grown negatively as 0.79 percent for MBMC. The warrant fees grown as 0.17 percent. The special transfer fees is observed as 6.68 per cent. The growth of other receipts for corporation is 10.72 per cent. The architecture comprises as different items. The revenue receipts from building permission fees is observed as 6.47 per cent. The No Objection Certificate (NOC) is provided by the corporation to new building in its area. The growth from such revenue is seen as 6.21 per cent. The revenue receipts from TDR is only 0.57 per cent. Revenue receipts from development plan is 13.71 per cent. The revenue receipts from basic facility is 7.25 per cent over the period of time. Under total permits, the revenue receipts growth from factories, shops /hotel/other permits is 16.27 per cent from 2015-20. The MBMC also gets the grants from central and state government. The road construction and survey, the growth of grants is 1 per cent. MBMC received grant from 14th finance commission. It is grown as 16.33 per cent over the period of time. The grants for MLA is grown as 26.66 per cent. The grants for MP is observed as 4.35 per cent. The growth of education rabbit tax is observed as 5.10 per cent. The employment guarantee tax rebate is seen as 3 per cent. The court grants is observed as 7.47 per cent from 2015-20. The TB control related grant has grown as 2.17 per cent. The MBMC has received the routine vaccination grant. It is grant given by state and central government for vaccination of children. It has grown as 3.22 percent from 2015-20. The growth in minority related grant is only 1.50 percent. MBMC received the revenue from Maharashtra government under the category of clean Maharashtra program. The growth of grant is observed as 3.70 per cent. The growth of other grant as revenue receipts is seen as 6.64 per cent.

Mixed revenue receipts growth from interest on property tax is grown as 1.78 per cent. The interest on tax has grown with 1.78 per cent. The interest on fixed deposit has grown as 2.11 per cent from 2015-20. The health, sewage fees/fines has grown as 8.06 per cent. Municipal corporation charges fees for health care facilities. Health care related papers/OPD fees has grown with 1.99 per cent and the growth of late fees charges is 1.46 per cent. Government insurance fees (5.78 per cent) has grown from 2015-20. Other small deposits has grown from 2015-20. Municipal corporation provides birth, death certificates to its population but it charges fees for it. The birth and death certificate related fees/true copy fees has grown as 9.73 per cent from 2015-20. The other deposits is grown as 7.85 per cent. The hospitals/dispensaries permission fees has grown as 8.43 per cent. The marriage registration fees has grown as 4.26 per cent from 2015-2020. The municipal corporation charges fees for information. The growth in fees of right to information is observed as 2.46 per cent. The receipts from wood supply to cremation area has grown with 2.47 per cent. For census, the grant from government has grown with 0.12 per cent. We have also calculated the growth rate of sub categories of capital receipts.

TABLE 2. MBMC AND CAPITAL RECEIPTS OVER THE PERIOD OF TIME (PER CENT)

No	Category	Sub-category	CAGR
1	Library		
		The study center fees	3.41
2	City infrastructure		
		The permission stall	1.47
		City hall	1.41
		BOT	11.43
3	Gardens and beaches		
		Ground/ Chow patty	2.53
4	Health care		
		Hospitals blood donation space	3.64

Source: As per table 1

Capital receipts from the study center fees has grown as 3.41 per cent from 2015-20. The permission stall related capital receipts has grown with 1.47 per cent in MBMC. The city call related capital receipts has grown with as 1.41 per cent from 2015-20. Municipal corporation spends money on maintenance, construction and colouring of it. The capital receipts from grounds/chow patty has grown as 2.53 per cent. Money is spent on the construction of walls, colouring, sewage collection and cleanliness. The hospitals blood donation space

related capital receipts is grown as 3.64 per cent from 2015-20 per cent. We have also calculated the growth rate of revenue expenditure over the period of time.

TABLE 3. REVENUE EXPENDITURE OF MBMC (PERCENT)

No	Category	Sub-category	CAGR
1.	Administrative expenditure		
		Permanent structure	5.15
		Structures and security expenditure	3.64
		Travel and training and employee expenditure	4.88
		Telephone expenditure	4.58
		Telephone and zero expenditure	8.32
		Printing of forecasting report	11.24
		Accounting administrative expenditure	5.74
		Other minor expenditure	17.70
2.	Architecture section		
		Permanent structure	9.83
		Officers wing expenditure	6.37
		Corporate honorarium	11.63
		Mayors' allowance	34.71
		Opposition leaders' allowance	9.00
		Corporate training /travel allowance	38.47
		Municipal corporation elections	1.22
3	GST		
		Permanent structures	-1.00
		Security	5.27
4.	Tax expenditure		
		Permanent expenditure	2.84
		Tax section expenditure	12.97
		Property tax expenditure	6.04
5	Store house section(Scrap)		
		Permanent structure	
		General administration-stationary/printing	4.14
		Tax section: stationery /printing expenditure	24.18

		Hospital stationary printing	10.06
		Birth/Death stationary/ printing	61.50
		Library stationary / Printing	
		Magazines supply	6.29
		Employee uniform and rainy season goods	90.74
		Furniture repairing	1.07
		The 26 Jan, 15 August, 1st May snack distribution	10.36
6	Permission section		
		Permanent section	8.56
		Contract vehicle driver expenditure	5.45
		General administration petrol/Vehicle repairing	6.62
		Health care related petrol/vehicle repairing	12.85
		Hospitals related petrol/vehicle repairing	8.07
		Private vehicle rent.	5.70
		Officers' vehicles allowance	6.36
		Vehicle insurance payment	9.53
7a	Health facilities		
		Cleaning and solid waste management	8.64
		Permanent structure	67.30
		Security man	7.87
		Pesticide's purchase	7.12
		Pre-monsoon cleaning of drain	13.80
		Preparation of environment report	3.46
7b	Hospitals and dispensaries		
		The permanent establishments	8.59
		Temporary establishments	12.09
		Health program	12.86
		Cloth washing in hospitals/cleanliness	5.97
		Operation related grants	19.83
		Pulse polio program announcement	8.38
		Medicine purchase	4.16

		Surgical hospitals and mat material purchase /repairing and maintenance	4.38
7c	Veterinary section		
		Dog/snake bite/Jaundice Vaccination supply	5.04
		Stray dog prohibition	25.21
8	Markets/Cattle pen		
		Food for animals	7.33
9	Town hall and meeting house		
		Town hall repairing, cleaning and others	5.67
		Town hall repairing	2.05
		Town hall colouring /lift /other work	1.26
10	Cremation ground		
		Repairing and maintenance of cremation ground	15.31
		Purchase of wood	6.52
		Security guard or cremation ground	5.41
11	Encroachment section		
		Police protection at encroachment / security guard expenditure	8.51
		Emergency expenditure /Encroachment survey	12.64
		J.C.B.Gas caters, truck purchase/rental	30.45
12	Gardens section		
		Permanent structures	17.31
		Garden's temporary structures	6.14
		Soil/Garage /White sand supply	2.36
		Pesticides/ Insecticides	4.26
		Labour supply	5.38
		Vehicle petrol and repairing	13.16
		Old toys/Electric fitting	13.35
		Water supply through tanker	8.97
13	Construction		
		Permanent structures	6.12
		Temporary structures/security/home guards/traffic wardens	17.76

	Corporations' buildings, repairing and maintenance	5.08
	Public road repairing and building	4.06
	Industrial road draining repair	27.62
	Common toilets repairing and construction	6.59
	Ponds/Wells repair and cleaning	0.07
	Secular festival light and decoration	5.06
	Inspection of old buildings	18.58
	Repairing of drainage	5.72
	Sewage lids	3.32
	Bharat Ratna Atalbihari Vajpeyi adarsha ward yojana.	-1.00

Source : As per table 1

MBMC has different kinds of administrative expenditure. The permanent structure related to revenue expenditure has grown as 5.15 per cent. The structures and security expenditure has grown as 3.64 per cent from 2015-20. The municipal corporation spent money regularly on permanent staff. The travel, training and employee expenditure has grown with 4.58 per cent. The revenue expenditure on pricing of forecasting report is observed as 11.24 per cent. The accounting administrative expenditure has grown with 5.74 per cent from 2015-20. Architecture section related revenue expenditure has grown with different items. Expenditure on permanent structure is observed as 9.83 per cent. The officers wing expenditure has increased by 6.37 per cent from 2015-20. The corporate honorarium has increased as 11.63 per cent from 2015-20. The municipal corporation provides allowance to Mayer. The Mayer's allowance has increased up to 11.63 per cent from 2015-20. The opposition leaders' allowance has increased up to 9 per cent from 2015-2020. Corporate training/travel allowance has increased (38.47 per cent) much higher from 2015-20. The growth of revenue expenditure on municipal corporation's election has increased marginally over the period of time. It is grown as 1.22 per cent over the period of time. The expenditure growth on permanent structure is observed as minus 1 per cent from 2015-20. The expenditure on security has increased up to 5.27 per cent over the period of time. Permanent expenditure of corporation has increased up to 2.84 per cent from 2015-20. The tax section related expenditure has increased (12.97 per cent) from 2015-20. Municipal corporation spends money on offices, internet, computers and training of staff. The property tax related expenditure of corporation increased up to 6.04 per cent from 2015-20 of corporation. The store house section has different sub-sections. The general administration stationary /printing related expenditure has increased (4.14 per cent) from 2015-20. Under tax section, stationary/printing has observed as 24.18 per cent from 2015-20. The hospitals stationary printing expenditure has grown with 10.06 per cent. The birth/death related stationary/ certificate printing expenditure has grown with (61.50 per cent) significantly in Mira Bhayander Municipal Corporation. Magazine supply related expenditure has increased from 2015-20 and it is observed as 6.29 per cent. Furniture repairing expenditure of corporation has grown as 1.07 per cent from 2015-20. Mira Bhayander Municipal Corporation celebrates 26th January as republic day of India, 15th August celebration as independent day for India and 1st May celebrated as Maharashtra foundation day every year. The municipal corporation distributes snacks to its staff. The growth of expenditure is observed as 10.36 per cent from 2015-20. The permission section related expenditure has grown with 8.56 percent from 2015-20. The contract vehicle driver related expenditure has increased as 5.45 per cent from 2015-20. The general administration related expenditure such as petrol /vehicle repairing has grown as 6.62 per cent from 2015-20. The health care related petrol/vehicle repairing expenditure has grown as 12.85 per cent from 2015-20. The hospital related petrol/vehicle repairing related expenditure grown with 8.07 per cent in corporation. Municipal corporation hires the private vehicles for different purposes. The private vehicle rent has increased up to 5.70 per cent from 2015-20. The officer's vehicle allowance has increased

from 2015-20. It is grown as 6.36 percent. Municipal corporation pays the insurance of its vehicles. The vehicle insurance payment has increased as 9.53 per cent in corporation. Health care facilities has increased from different items. The cleaning and solid waste management has increased up to 8.64 per cent from 2015-20. The expenditure on labour supply has grown as 5.38 per cent. The vehicle petrol and repairing has increased up to 13.16 per cent of corporation. The toys/electric fitting has increased up to 13.35 per cent. Permanent structure growth has increased with 6.12 per cent. The temporary structures/security/home guard had grown with 17.76 per cent. The corporations building repairing and maintenance has grown with 5.08 per cent from 20015-20. The public road repairing and building has grown with 4.06 per cent. The industrial road and drain has grown with 27.62 per cent for corporation. Municipal corporation has build toilets in different wards to maintain hygiene in city. The expenditure on common toilet, repairing and construction has increased as 6.59 per cent. The ponds/wells repair and cleaning has seen only 0.07 per cent growth from 2015-2020. Municipal corporation spends money for different festivals. It is for peace and harmony in the society and area. The expenditures on festivals light and decoration has increased up to 5.06 per cent over the period of time. The inspection of old building related revenue expenditure has grown with 18.58 per cent. In corporation, the repairing of drainage related expenditure has grown with 5.72 per cent. The sewage lids related expenditure has grown as 3.32 per cent from 2015-20. Bharat Ratna Atalbihari Vajpeyi Adharsha ward Yojana related expenditure has negative growth and it is observed as -1 per cent.

TABLE 4. CAPITAL EXPENDITURE OF MBMC (PER CENT)

No	Category	Sub-category	CAGR
1	Administrative expenditure		
		General administration	8.22
		Furniture /machine purchase	7.42
2	Computer section		
		Computer /Hardware/software purchase WiFi services	15.83
3a	Health care		
		Corporation share	18.55
3b	Hospitals and dispensaries		
		Ambulance /ICU, Ambulance purchase	3.50
		Hospitals. furniture purchase	7.09
		Pandit Bhimsen Joshi hospital construction	-0.43
		Mira Road hospital/ward office building	21.82
4	Gardens section		
		New vehicle /Fitness machine purchase	4.58
		Water sprinkle /drip irrigation	3.19
		Garden's /Divider beautification	5.35
		Development of nursery	2.48
5	Crematory section		
		Crematory building /Development expenditure	2.13
		Crematorium	0.42
6	Market and slaughter house		
		Building market	1.00
		Slaughter house building	2.52

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MODERNIZING CIVIC INFRASTRUCTURE AND QUALITY OF SERVICES THROUGH PUBLIC PRIVATE PARTICIPATION IN MIRA BHAYANDER MUNICIPAL CORPORATION (MBMC), INDIA

7	Public work		
		Road, Name changing of plates	4.95
		New road/D.P.Road building /Govt grants	0.54
		New draining /Drainage building /Govt grants	1.67
		Commissioner residence	23.06
		Toilets/e-toilets	2.04
		Bhayander station Jessal park, sub ways/old railway gate	-0.86
		Ward office/Building construction	15.42
		MLA grant	35.25
		Grants from Member of Parliament	4.69
		Sport club and others	-0.93
		Senior Citizen un-gowned kendra	9.72
		Third party accounting fees	3.69
		Common pond wells colouring	1.50
		Bhayander station beautification	3.70
		Technical persons professional fees	16.16
8	Development plan implementation		
		Bhayander East /West/Ghodbander Chow patty	3.09
		Ward office furniture/ building construction and others	8.89
		Building community center	0.00
9	Architecture		
		Development of dividers	0.88
		Computerization of development plan	12.44
10	New electricity work		
		Crematorium	28.53
		Gardens	18.90
		New steel light	4.78
		Total electricity	4.79

Source: As per table 1

Capital expenditure comprises as different subsections. The general administration related capital expenditure has grown as 8.22 per cent from 2015-20. The furniture /machine purchase related expenditure has increased at 7.42 per cent. The computer section has regular purchase of computer/hardware /software's. The expenditure has increased with 15.83 per cent. The health care related corporate share has increased (18.55 per cent) over the period of time. Hospitals and dispensaries related expenditure has increased of corporation. The ambulance/ICU/ambulance related expenditure increased as 3.50 per cent over the period of time. The expenditure on hospitals, furniture purchase has increased of 7.09 per cent from 2015-20. The MBMC has started built up of Pandit Bhimsen Joshi hospital. There is no major hospital for general population of corporation. The funds have not provided to such hospital. Therefore, the growth of funds for hospital is (-0.45 per cent) grown negatively. The Mira road hospital /ward office building related expenditure has increased up to 21.82 per cent. The new vehicle /fitness machine purchase related expenditure has increased as 4.58 per cent over the period of time. Water sprinkle /drip irrigation expenditure has grown with 3.19 per cent. The garden/divider's related expenditure has increased up to 5.35 per cent from 2015-20. The expenditure on

development of nursery in the corporation area has grown as 2.48 per cent. Crematory in corporation is concerned then it is maintained by the corporation. The municipal corporation spends money for crematory and development of surrounding area. The expenditure for such activities has grown with 2.13 per cent. Market and slaughter house contains different items. The growth related to expenditure of corporation on building, market is observed as 1 per cent. The expenditure grown on slaughter house building is 2.52 per cent. The public work has different sub items of expenditure. The expenditure on road name /changing plates has grown as 4.95 per cent. The new road/D.P.Road building/government grants has increased marginally (0.54 per cent). The expenditure on commissioner residence has increased significantly (23.06 percent) over the period of time. Municipal corporation has built number of toilets in different wards. It spends maximum money on its maintenance. The expenditure growth on toilets in corporation area has increased as 2.04 per cent. The expenditure on Bhayander station Lesal park sub ways/old railway gate has declined (-0.86 per cent) over the period of time. The expenditure on ward office/building construction has increased as 15.42 per cent. MLA grant related expenditure has increased significantly (35.25 per cent) of corporation. The grants for Member of Parliament related expenditure increased as 4.69 per cent. The sport club and others related expenditure has declined as -0.93 per cent. The expenditure on Bhayander station beatification has increased as 3.70 per cent. The technical persons professional fees expenditure has increased as 16.16 per cent. Bhayander East /West Ghodbander chow patty expenditure has increased as 3.09 per cent. The ward office furniture/building construction and others related expenditure has increased (8.89 per cent). The computerization of development plan related expenditure has grown (12.44 per cent) from 2015-20. The expenditure on gardens has increased as 18.90 per cent. The new street light related expenditure has also increased as 4.78 per cent. Electricity is used by corporation for different purposes. The expenditure on electricity has grown as 4.79 per cent from 2015-20.

6. REGRESSION RESULTS

We have used ordinary regression to understand the relationship from dependent variable with independent variables (Greene William H. 2018). We have used revenue receipts and expenditure, capital receipts and expenditure as the dependent variable and regressed it into subcategory.

$$Y_{it} = \beta_1 + \beta_2x_1 + \beta_3x_2..... + \varepsilon \tag{7}$$

Where

Y_{it} = The dependent variable is sum of receipts and expenditure.

β = An intercept term

x_i = Independent variables of different sub-categories

ε = An error term in equation

The significant variables after the regression are presented into following table. We presented the results for revenue receipts and expenditure as well as capital receipts and expenditure of Mira Bhayander Municipal Corporation in the following table.

TABLE 5. THE REVENUE RECEIPTS OF MBMC

Variable	Coefficient (Std.Error)	T test
pay and park	8716.21***(879)	9.9
Late fees on books	5921.05***(1001.27)	5.91
Interest on property tax	269.98***(72.40)	3.72
Constant	29889.59**(1809.35)	16.52
R square= 0.99	Adjusted R square=0.99	Std error of estimate=668.39

** Significant at 5 percent. *** Significant at 10 per cent

The revenue receipts are positively co-related to pay and park in MBMC. Municipal corporation has established the pay and park facilities at different wards and near station. It receives parking fees because people are parking vehicles in parking area. Municipal corporation has different libraries in wards. It has created the facility for people to carry books at home and read. But people do not return books on time. Therefore, the late fees on books is positively co-related to revenue receipts. The interest on property tax is positively co-related with revenue receipts of MBMC from 2015-20. Many residents do not pay the property tax on time. Municipal corporation puts penalty, interest on such amount. Therefore, the interest on property tax is positively correlated to revenue receipts. We have also presented the regression results for capital expenditure.

TABLE 6. REGRESSION RESULTS FOR CAPITAL EXPENDITURE FOR CORPORATION

Variables	Co-efficient	Std. Error	T test
City hall	-8.03	1.06	5.01
Grounds /Chow patty	-24.98	2.92	8.55
Constant	1319.64	104.83	12.58
	R ² =0.98	Adjusted R ² =0.96	Std.Error of the Estimate =42.677

The capital receipts are negatively correlated to city hall. Municipal corporation do not spend money on repairing of city hall. Lower allocation of funds is statistically significant. The capital expenditure to grounds /chow patty is negatively co-related and it is statistically significant. Municipal corporation does not spend adequate resources on maintaining of beaches, grounds and chow patty. We have also presented the regression result for revenue expenditure.

TABLE 7. THE REGRESSION RESULTS FOR REVENUE EXPENDITURE OF MBMC

Variables	Coefficient (std error)	T test
Permanent structure	113.90*(3.01)	37.83
structures and security expenditure	-187.86*(4.27)	-43.93
Hospital, stationary, printing	-576.75**(55.01)	-10.48
Constant	6104.38**(597.99)	10.20
R square=0.98	Adjusted R ² =0.96	standard error of estimates 117.00

The revenue expenditure is positively co-related and statistically significant to permanent structure in corporation area. Municipal corporation spends money for permanent structure. The revenue expenditure is negatively co-related and statistically significant to structures and security expenditure of municipal corporation. The municipal corporation do not spent money on hospitals and stationery. The revenue expenditure for hospital stationery, printing is negatively co-related and statistically significant. We have also presented the regression results for capital expenditure: They are as follows.

TABLE 8. THE REGRESSION RESULT AND CAPITAL EXPENDITURE

Variables	Coefficient (Std.Errors)	T test
Administrative expenditure	7964.38**(845.85)	9.41
Corporation share	-21.90**(3.21)	6.80
Pandit Bhimsen Joshi hospital construction	-85.43**(8.91)	9.58
constant	30962.87(2517.925)	12.3
R Square=0.99	Adjusted R Square=0.99	Std. Error of the Estimate=502.43

@* Significant at 5 percent

The capital expenditure is positively co-related to administrative expenditure of MBMC from 2015-20. The corporation's share is declining and it is negatively correlated to capital expenditure. Corporations do not spend significantly over the period of time and the share is declining continuously. The capital expenditure related to Pandit Bhimsen Joshi hospital construction is negatively co-related and statistically significant. Municipal corporation do not spend money for hospital construction.

7. POLICY IMPLICATION AND CONCLUSION

Municipal corporations and council are important in provision of infrastructure and services to people in India. Local bodies like Municipal Corporation play an important part in the working democracy in a vast country like India. Recent history strongly suggests that the power of local initiative is a sine qua non of successful and stable democracy. India has been experiencing a very fast growth rate of urbanization. Finance is considered as the lifeblood of commerce and industry. Local self-governments can work smoothly only when the resources at their disposal are adequate and they have to be utilized in an effective and efficient manner (Jariwala, V.S. 2016). Mira Bhayander is one of the developing municipal corporation in MMRDA. The revenue receipts are more with the hoarding, illegal property demolition, permission to factories, shops, and hotels from 2015-20. The capital receipts are found more with BOT and hospital blood donation space. The revenue expenditure is more with mayors' allowance, permanent structures, maintenance and repairing of cremation grounds, old toys and electric fitting. The capital expenditure is more with health care, hospitals and ward office building, commiseration residence, MLA grant, cremation and signal material of corporation. The revenue receipts are positively correlated to pay and park, late fees on books, interest on property tax. The capital receipts are negatively co-related to city hall, grounds/Chow patty. The revenue expenditure is positively co-related to permanent structure whereas it is negatively co-related to structures and security expenditure, hospital stationary printing. The capital expenditure is positively co-related administrative expenditure and it is negatively co-related to corporation share, Pandit Bhimsen Joshi hospital construction. There are more alternative policies required to increase the revenue receipts and expenditure of Mira Bhayander Municipal Corporation. The revenue receipts can be increased with more property tax, entertainment tax, hoarding, pay and park and entertainment tax. Municipal corporation must increase fines on encroachment, illegal constructions. It must increase fees for non-objection certificate to buildings and constructions. The other fees such as marriage registration, water supply, right to information. Municipal corporation must control the revenue expenditure immediately. It must reduce expenditure travel and training and employee expenditure. It must reduce expenditure on telephone and administrative expenditure. Municipal corporation must reduce the expenditure on all kind of stationary. It must reduce the expenditure on vehicles, petrol, vehicle insurance etc. Municipal corporation must increase expenditure on pre-monsoon cleaning up of drains. The expenditure must increase on health care facilities. The expenditure must be increased on health programs, medicines, hospitals construction and health care staff. The expenditure on encroachment section must increase with more security and CCTV. The expenditure related to garden section must be increased. It must be increased on garden's permanent structures, water supply, toys for children. Municipal corporation's expenditure is increasing fast but revenue is not increasing. At present, the municipality finances are equalized mainly in a horizontal fashion, since the biggest contribution is provided by local governments of the same level as those receiving the financing (Gross E. and Silvija Bruna 2012). There is need to modify the structure of expenditure of corporation.

The construction related expenditure must be reduced via building repairing, toilets, ponds and wells, sewage, repairing and cleaning. The capital expenditure must be reduced on administration and computer section. The municipal corporation must increase capital expenditure on health care, hospital dispensaries. The expenditure on garden and crematory must be increased over the period of time. Capital expenditure on public work is increasing but it is very low. It must be increased on new drainage, toilets, building construction, beautification work etc. The minimizing local government dependency on the state can achieve multiple benefits by reducing the opportunities for pork-barrelling and improving innovation and efficiency at the local level (Kitsos, A. and A. Proestakis 2021). There is an increase in public demand for accountability from public servants at all levels. This has emerged from the greater acceptance of democratic values and traditions around the globe (Maama H. and Ferina Marimuthu 2020). Municipal corporation must increase resources through various taxes and

reduce expenditure. Municipal corporation must involve private sector for delivery of different civic services. Private sector can invest money in sewage treatment, solid waste collection and transport, building roads and bridges, street lights, water distribution and electricity supply. Private sector must be regulated with marginal profit on services provision to population. They must invest financial resources for longer period for provision of different services in municipal corporation. Such policies will certainly help to reduce the deficit in corporation's budget and improve the finances of Municipal corporation of Mira Bhayander.

APPENDIX 1

We have used Compound Annual Growth Rate (CAGR) method for budget analysis of Mira Bhayander Municipal Corporation. The method of compound growth rate is explained as follows,

$$Y_{it} = a * b^t$$

In the above equation, Y_{it} is the estimated revenue /capital income or expenditure of Mira Bhayander Municipal Corporation of i^{th} component for t period. For calculating CAGR, the period is considered from 2014-15 to 2020-21. Similarly a and b in above equation are considered as parameters. We can further write above equation as follows.

$$\text{Log}Y_{it} = \text{Log}a + T\text{Log}b + \text{Log}u_{it}$$

The log is taken for estimated Mira Bhayander Municipal Corporation's revenue as well as capital income and expenditure over the period. The compound growth rate (G) is estimated as follows.

$$G = (\hat{b} - 1) \times (100)$$

From above equation, G represents the compound growth for 2015-2020 data series. It is written in percent form for each subhead of budgets of Mira Bhayander Municipal Corporation. The parameters are derived as follows.

$$\hat{B} = \text{Anti log } b$$

The growth rate is presented for the different subheads of revenue and capital receipts and payment of corporation.

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