

# “Financing capital expenditure through municipal bond market in Navi Mumbai Municipal Corporation”

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# FINANCING CAPITAL EXPENDITURE THROUGH MUNICIPAL BOND MARKET IN NAVI MUMBAI MUNICIPAL CORPORATION

## Abstract

In India, the urban local bodies do not have decentralization in various functions. Therefore, municipal corporations find various issues in functioning and revenue generation. It has resulted into either shortfall or low quality infrastructure services to people. The Navi Mumbai Municipal Corporation is developed as modern municipal corporation. Municipal corporation invested financial resources in development for civic infrastructure. Therefore, population, industries, educational institutions, markets, transport and other facilities are expanding very fast. The ordinary least square regression results shows that the municipal corporation has positive co-relation with revenue receipts from LBT, property tax and town planning. The revenue expenditure is positively co-related with municipal estate, public health and hospitals, primary and secondary education. The engineering work for poor is negatively correlated with revenue expenditure. The capital receipts are positively co-related with fire brigade, auditorium, sports and cultural programs and security deposits and water supply. The capital expenditure is positively co-related to women and child welfare schemes, primary education, environment monitoring. It is negatively co-related with dumping grounds. The municipal corporation must raise funds from capital market through municipal bonds. More investment must be made in civic infrastructure. Similarly, corporation must spend more funds on poor, welfare of women and children. Municipal corporation must monitor and protect environment. It must give more priorities for processing of solid and e-waste, protect local culture, primary and secondary education, health care for all and technology in provision of civic services. It must develop human resource and create best place to live in metropolitan region.

## Keywords

culture, health, population, sewage, solid waste, housing, technology, poor

## JEL Classification

H6, H72, H76

## INTRODUCTION

The urban local bodies play a crucial role in delivery of social and economic services. Fiscal status of these bodies is, therefore, important for overall economic development, particularly for the up-liftment of the masses (Purohit, 2016). Local finance at the bottom of the public finance pyramid can serve as the engine of economic development. Accounting is an important tool of financial management. It involves not only keeping all the records of financial transactions, but also analyzing these transactions and supplying the necessary information to the authorities for forecasting, planning and exercising control (Jariwala, 2016). A lot of funds are spend by the public authority for the common people and for the creation of various socio-economic infrastructures. The government needs a lot of money to run it successfully (Sharma, 2013). Municipal corporations are local self-government body that administers the cities (Katyal & Raj, 2014). The municipal corporations are providing the constant and regular delivery of services to people (Madumo, 2015).

Due to modern infrastructure and housing, people from all over India are migrating to Navi Mumbai. They migrate mainly for employment and business purposes. After establishment of Navi Mumbai Municipal Corporation, it has become government agency, which solves daily issues with the people. The poor are also migrating to Navi Mumbai for employment purposes. They work at jobs and at various projects or they do small business. The housing is very costly and poor people could not afford to buy housing in the city. They live in slums and work the whole day. But municipal corporation does not provide any infrastructure facilities to the poor people in the city. They are denied the housing, water supply, sanitation, electricity in the city. The municipal corporation does not spend money on migrants, but destroys their encroachment through bulldozing on their houses. It is regularly done in all the sectors in the corporation area. Municipal corporation does not spend much money on disabled and deprived people. The women and child welfare is not given much importance in budgets. The child welfare is sensitive issue and needs attention, but in budgets, it was given very low priority.

The numbers of health care and educational institutions are permitted to establish in corporation area. But the quality health care is not provided to patients in corporation area. Most of the patients get admitted in various hospitals, but they are charged more in terms of medical bills. It keeps the poor people out of health care facilities and coverage. They depend on the public health care facilities. They do not provide care for particular diseases and facilities are inadequate in public health care units. Most of the time, one health officer is absent means whole work get stops. People are visiting Mumbai city for health care facilities. They spend more energy and time for health care facilities. Educational institutions in corporation area are private in nature. They enrol students from all over the country. Few private schools and colleges are charging huge fees from parents. But the government has not established educational institutions under public sector. The quality of primary and secondary education is low and it is not adequately provided in corporation area. The students are visiting Mumbai city for better quality higher education. Most of the civic amenities and services are privatized in corporation area. The poor people cannot afford to pay for the various services in the city. In Navi Mumbai, most of the land acquired for various infrastructure projects. The private land is developed for modern city. The people were working in traditional jobs such as fishing, farming, sellers, retailers of goods and daily wage earners. Most of the unskilled workers have lost their livelihood. But project affected people are not given importance in development of city. The youths are not given adequate training for jobs or alternative land for business opportunities in city. Near the municipal corporation, public sector projects are announced such as international airport, Jawaharlal Nehru Port Trust, Special Economic Zone, industrial estates. Over the period of time, land is acquired for these projects. The land is acquired for projects, but the cover of mangroves is destroyed in Navi Mumbai. The wetlands are destroyed for different purposes. The wetland and forest land is acquired for development projects. Every day, thousands of million litres of drinking water are supplied in corporation area. All the units, such as households, garages, industries, educational institutions, entertainment and welfare institutions, are getting regular drinking water supply. Every day, they generate maximum sewage in corporation area. The sewage is not treated completely in municipal corporation. It is left untreated in rivers, ponds and wetlands. The numbers of industries have also grown in region over the period of time. They produce different products required for day-to-day purposes to people and export variety of products regularly. Few industries are polluting air, water and soil. They discharge sewage and industrial waste in nearby ponds, rivers and sea. The untreated sewage is damaging the biodiversity in region and it kills the birds, fish, mammals and other animals in the water. The high income groups in region are generating more solid waste. Every day, they shop bottled water, packed food and generate more solid waste. Such solid waste is not completely collected all over corporation and processed by municipal corporation. Few tons of solid waste are collected and deposited at different landfill sites in municipal corporation. Such uncollected and untreated solid waste pollutes soil and air environment in corporation. The numbers of vehicles are increasing very fast in corporation due to high income of population. It leads to high congestion, noise and air pollution in region. State government is continuously widening old roads

due to heavy traffic in each sector of municipal corporation. The state government always brings new infrastructural projects in and near the corporation. These projects are mainly for transport purposes and they include metro and express highway. For such projects, state government has overtaken maximum private land in region. There are number of instances under which private and public land is acquired and wetland related issues are created.

The sewage treatment plants do not treat entire sewage water. Every day, thousands million litres of untreated sewage is getting mixed with fresh stock of river and sea water. The groundwater is affecting wetland salinity, particularly in closed-basin wetlands receiving groundwater discharge (Baugha et al., 2018). Overall pollutions of water bodies and wetlands are increasing fast. There are numbers of species existing in ponds, rivers, Arabian Sea near the corporation area. The mammals, fish and migratory birds are very sensitive to environmental degradation in corporation. Due to high urbanization, the migrating birds, fishes and reptile animals are declining very fast in corporation area. Due to affordable housing and amenities, people are migrating to this corporation. Huge construction and real commercial projects are undertaken by builders. Such projects are destroying the biodiversity in corporation areas. Human factors are the major contributors for wetland degradation and alteration of biological community composition. The extent of urbanization and land use activities strongly influence the species composition of wetland plant communities. The wetlands are degrading, with extensive human activity. The wetlands currently provide more provisioning and cultural services, while regulatory and supporting services are predominantly provided by urban wetlands, followed by reference wetlands, though they are highly impacted (Wondie, 2018). The people in corporation are involved in destruction of wetlands. They are cutting forest, man grows and destroying water bodies. The land could be made available for slums. Therefore huge loss is observed every year due to decline in wetland and related services. The major objective of this paper is to evaluate the revenue receipts and expenditure, as well as capital receipts and expenditure of corporation since its establishment. The aim is also to find the statistical significance of the subheads of revenue and expenditure. The objective of this study is to provide the policy implication to increase the financial options to municipal corporation.

## 1. DATA

We have collected the secondary data of Navi Mumbai Municipal Corporation budgets. The data are available at municipal corporation website. We downloaded the recent budgets from municipal corporation website. For few years secondary data are collected from books and past studies. There are various studies conducted of public finance of Navi Mumbai. We have refereed various studies related to budgets of Navi Mumbai. At the end, secondary data of revenue and capital receipts and expenditure are available from 2001 to 2018. We have analyzed these data in SPSS@24 and STATA @11 software.

## 2. METHODOLOGY

We have applied the annual compound growth method. Such compound growth rate is explained as follows:

$$Y_t = ab^t, \quad (1)$$

where  $Y_t$  – estimated income or expenditure,  $T$  – year,  $a$  and  $b$  – parameters to be estimated.

$$\log y_t = \log a + t \log b + \log u_t. \quad (2)$$

The above equation is estimated by the ordinary least square (OLS) method, compound growth rate ( $g$ ) is then estimated by the identity given in equation as follows:

$$g = (\hat{b} - 1) \cdot 100, \quad (3)$$

where  $g$  – estimated compound growth rate in per cent and

$$\hat{b} = \text{anti log } b. \quad (4)$$

We have used ordinary least square regression method to understand the relationship of revenue and capital receipts and expenditure with subheads.

## 2.1. Economic model

We have developed economic model related to total revenue and expenditure of municipal corporation. It is given in short as follows:

$$\sum_{i=1}^n TR = \left[ \sum_{i=1}^n RR + \sum_{i=1}^n CR \right] + G + T. \quad (5)$$

Total revenue at particular year comprises revenue receipts, capital receipts, grants and tax to corporation. The revenue receipts and capital receipts for particular year are further divided as follows:

$$\sum_{i=1}^n RR = GS + PR + PW + H + SWM + CA + F + PASW + OS. \quad (6)$$

The revenue receipt of corporation at particular year comprises general services, planning and regulation, public works, health, solid waste management, civic amenities, forestry, poverty alleviation and social welfare, other services:

$$\sum_{i=1}^n CR = GA + TP + FB + A + ACP + SD + WS. \quad (7)$$

The capital receipts are at particular year mainly divided into general administrative services, town planning, fire brigade, Vishnu das Bhave Auditorium, sports and cultural programs, security deposits and water supply:

$$\sum_{i=1}^n TE = \left[ \sum_{i=1}^n RE + \sum_{i=1}^n CE \right] + T. \quad (8)$$

Total expenditure of corporation in particular year comprises revenue expenditure, capital expenditure and taxes. We have also given the revenue expenditure of municipal corporation as follows:

$$\sum_{i=1}^n RE = GS + PR + PW + H + SWM + CA + F + PASW + OS. \quad (9)$$

Revenue expenditure in particular year comprises general services, planning and regulation, public works, health, solid waste management, civic amenities, forestry, poverty alleviation and social welfare and other services:

$$\sum_{i=1}^n CE = GA + PR + PW + H + SWM + CA + F + PASW + OS + L. \quad (10)$$

In various budgets, the capital expenditure at any year is mainly divided into general services, planning and regulation, public works, health, solid waste management, civic amenities, forestry, poverty alleviation and social welfare, other services and loans.

## 2.2. History of Navi Mumbai Municipal Corporation

After independence in Mumbai city, the growth of population, industry, trade and commerce was observed fast. It further affected the quality of life in the city. The standard of living was declining in the city. Mumbai city was facing the limitation of horizontal growth due to Arabian Sea at three sides. Government tried to solve the issue of congestion and overpopulation in city. It accepted various alternatives to solving the overpopulation and overindustrialization in city. In 1958, government appointed a study group under the chairmanship of Shri S.G Barve, Secretary to government public work, department to evaluate the issue of congestion, traffic, deficiency of open spaces, play fields, shortages of housing and over concentration of manufacturing units and industries. The committee expected to recommend specific measures to deals with issues in city.

Therefore, Barve group gave its report in 1959. The committee recommended a rail cum Road Bridge to be built across the Thane creek in order to connect peninsular Mumbai with mainland. The bridge was expected to accelerate development across the creek. It could relieve pressure on city's railway and roads. It could also draw away industrial and residential concentrations east to the mainland. The Barve group felt that eastward development could be more planned and systematic development. Government accepted the report of Barve group, but never found feasible to develop eastward growth of city. Therefore, government appointed another committee under the chairman of Prof. D.R. Gadgil who was Director of Ghokhale institute of politics and economics Pune. He was asked to formulate broad princi-

ples of regional planning for the metropolitan regions of Mumbai, Panvel. The Gadgil committee made two important recommendations. Firstly, there is planned the decentralization of industries with severe restrictions on further industrial growth in Bombay region. Secondly, development of main lands is as multinucleated settlement. Each settlement could be in size of 2.5 lakh population. Such nodes could be called as nodes in the plan. Entire development in proposed series of nodes strung out along mass transit area in region. The nodes in development are proposed as multi-nucleated settlements. But these nodes are mainly divided in terms of schools, colleges, shopping centres and other essential services. They are mainly separated on the basis of available green spaces in region. The regional planning board was constituted under the chairmanship of Shri.L.G.Rajwade. The draft regional plan of board was finalized in January 1970. This draft proposed the development of twin city across harbour. One is on mainland to the east to counter magnet to the office concentration taking place at the Southern tip of Mumbai. The alternative growth pole was to counter the over population and further growth of reallocate on the mainland.

The Committee signified the Thane Belapur industrial development and Taloja industrial area. The Committee recommended Thane Creek Bridge and proposal of the Mumbai port trust to be shifted at Nhava Sheva port in Navi Mumbai. The committee recommended the new metro centre, that is, Navi Mumbai. Such centre was developed to accommodate 21 lakh populations. The operation of Jawaharlal Nehru Port was started on May 26, 1989. The purpose was to decongest Mumbai port and serve as port hub to state. In 1971, the planning of Navi Mumbai began. The state appointed leading architects and urban planners. The CIDCO was established on March 17, 1971, under Companies Act 1951. The CIDCO area was covered 150 km of total 720 km of total coastal area of the state. It consists of 86 villages covering 15,954 hectores (39,420 acres). Around 2,870 (7,100 acres) were acquired by the government of Maharashtra. The area covered by Navi Mumbai is Southern part of Thane taluka, part of Panvel and Uran tahasil of Raigad district. CIDCO mainly covered 14 small nodes

for facilitating comprehensive development such as nodes are Airoli, Ghansoli, Koparkhairane, Juhu nagar, Vashi, Turbhe, Sanpada, Nerul, CBD Belapur, Kharghar, Kamothe, New Panvel, Kalmboli, Ulwe, Dronagiri, Taloja, Karanjade. CIDCO planned and constructed all the railway stations, roads, public spaces in Navi Mumbai. It has developed nearby areas in commercial way. In 1973, Vashi Bridge was opened for transport. The Sion-Panvel highway was built to reduce the travel time from Sion to Panvel. In 1990's, wholesale agricultural market, that is, APMC was shifted to Sanpada. The harbour railway connected Vashi from Mankhurd in 1992. Such developments caused the growth of Navi Mumbai. New railway line was planned from Thane to Vashi and further extended to Vashi and Nerul. It helps many commuters to travel every day to Navi Mumbai. The office spaces shifted from central side to harbour side. The Thane Panvel rail corridor opened new belt for economic development. New rail corridor is developed from Nerul and Belapur to Uran. It has further opened for economic development of Ulwe and Nava Sheva Port. Due to local rail connectivity and national highway, huge investment came in real estate, industries and transport. Government announced development projects such as international airport, metro line and special economic zone. Therefore, South Navi Mumbai is developing very fast. At the same time, modern infrastructure is created in nodes such as Kharghar, Kamothe, Panvel and Kalmboli. Now out of 14 nodes nine nodes are maintained by Navi Mumbai Municipal Corporation. Navi Mumbai Municipal Corporation is given the charge of CBD Belapur, Nerul, Juinagar, Vashi, Turbhe, Koparkhairane, Ghansoli, Airoli, Digha and Sanpada from January 1, 1998. In every budget, numbers of schemes are announced to upgrade existing civic infrastructure and new projects in all nodes of corporation.

### 2.3. The growth of revenue and capital receipts and expenditure

We have estimated the growth of revenue and capital receipts and expenditure from 2000–2001 to 2017–2018. We have calculated the annual compound growth rate for the above period. It is explained as follows.



**Table 1.** The revenue and capital receipts and expenditure (from 2000–2001 to 2017–2018) (CAGR)

Source: Calculated from 2000–2018 budgets.

| Particulars         | CAGR  |
|---------------------|-------|
| Revenue expenditure | 12.54 |
| Capital expenditure | 14.06 |
| Tax refund          | 6.88  |
| Revenue receipts    | 13.19 |
| Capital receipts    | 9.73  |
| Grants              | 9.49  |
| Government tax      | 6.83  |

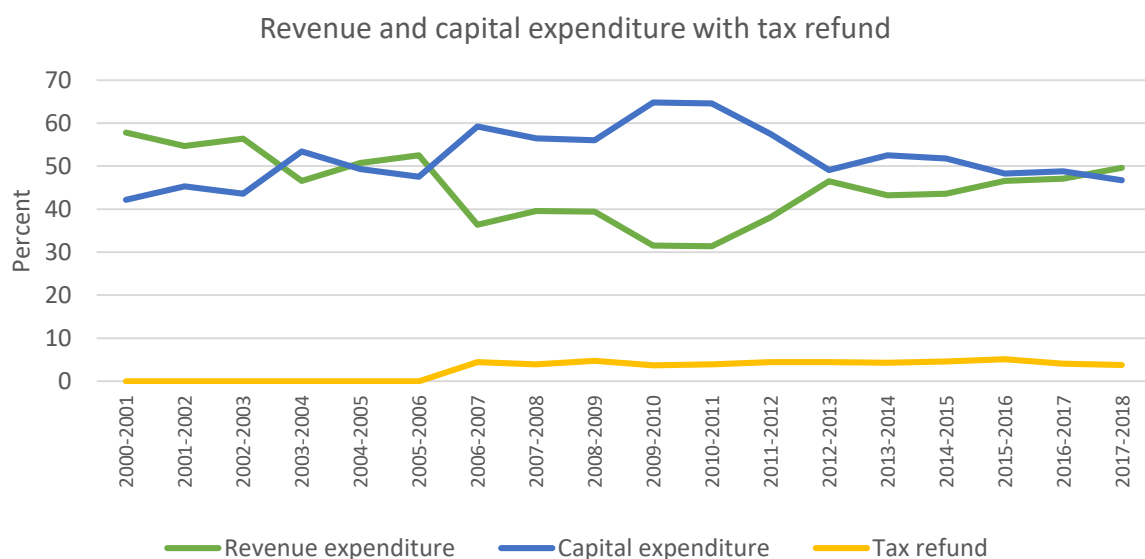
The table shows that revenue expenditure has grown at 12.54 percent from 2000–2001 to 2017–2018. Municipal corporation is spending regularly on various civic services. The capital expenditure was observed as 14.06 percent from 2000–2001 to 2017–2018. It is the highest expenditure done by corporation to create and upgrade civic infrastructure. We found capital expenditure to be more than revenue expenditure over the period of time. The tax refund growth was observed as 6.88 percent. The revenue receipts from 2000–2001 to 2017–2018 were 13.19 percent. Such revenue receipts are less than revenue expenditure. We have also observed the capital receipts grown as 9.73 per cent from 2000–2001 to 2017–2018. We can conclude that the revenue receipts are more than capital receipts. The growth of grants was 9.49 percent over the period of time. The growth of government tax is observed as 6.83 per cent from 2000–2001 to 2017–2018.

## 2.4. Revenue and capital receipts of corporation

We have calculated the revenue and capital expenditure and tax refund from 2000–2001 to 2017–2018. Figure 1 shows the percentage of total expenditure in three categories.

In 2000–2001, the revenue expenditure was observed as 60 per cent and capital expenditure was more than 40 per cent. In 2001–2002, the revenue expenditure has declined up to 50 per cent and the capital expenditure increased up to forty five cent. In 2003–2004, the revenue expenditure was observed as more than forty five per cent and the capital expenditure was more than fifty per cent. We have not found much gap in the capital and revenue expenditure. In 2006–2007, the revenue expenditure was thirty five per cent. The capital expenditure was almost sixty per cent. The revenue and capital expenditure was observed as almost similar in 2015–2016. The tax refund was around 5 per cent from 2006–2007 to 2017–2018. After 2015–2016, we found similar increase of revenue and capital expenditure in municipal corporation. Perhaps, the municipal corporation decides the same revenue and capital expenditure over the period of time. The tax refund has also not changed much over the period of time. We have also shown the revenue and capital receipts, grants and tax to Navi Mumbai Municipal Corporation from 2000 to 2018.

Source: From 2000 to 2018 NMMC budgets.

**Figure 1.** Revenue and capital receipts with total receipts of NMMC (per cent)

Source: From 2000 to 2018 NMMC budgets.

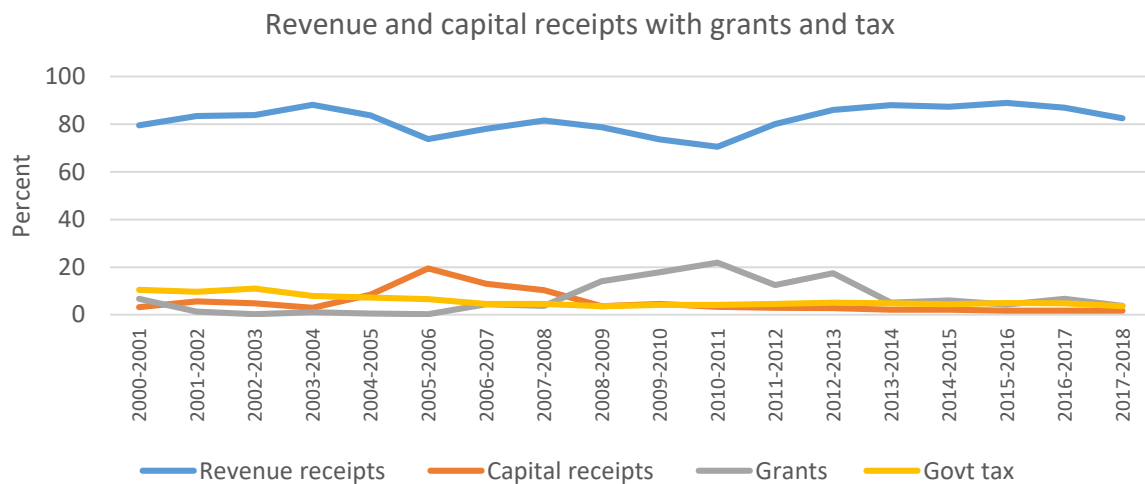
**Figure 2.** Revenue and capital receipts, grants and tax of NMMC

Figure 2 shows that the revenue receipts of municipal corporation was almost 80 per cent from 2000–2001 to 2003–2004. The capital receipt from 2000–2001 to 2003–2004 was less than 5 per cent. The government tax from 2000–2001 to 2004–2005 was almost 10 per cent. After 2007–2008, the government tax has continuously declined. The grants for municipal corporation was more than 10 per cent from 2009–2010 to 2012–2013. But after 2012–2013, the grants for municipal corporation declined very fast. Under Jawaharlal Nehru Urban Renewal Mission (JNNURM), the central government offered grant to municipal corporation. Now the corporation is declared as smart city. Therefore, grants have not received till now. The revenue receipts from 2011 to 2012 was more than 80 per cent. In the period 2017–2018, the revenue receipts were found as exactly 80 per cent. The revenue receipts have declined over the period of time. Now municipal corporation is trying to increase the revenue through various methods, but it is not successful yet. But capital receipts, grants and government taxes were less than 5 per cent.

## 2.5. The revenue receipts for Navi Mumbai Municipal Corporation

We have calculated the compound annual growth rate from 2000–2001 to 2017–2018 period for revenue receipts of corporation. The per cent of growth rate over the period of time of various subheads is presented in the following table.

**Table 2.** The revenue receipts of Navi Mumbai Municipal Corporation (CAGR) (from 2000–2001 to 2017–2018)

Source: As per Table 1.

| Categories                             | Revenue receipts                            | Percent |
|--|---|---------|
| General administration                 | General administrative service              | 13.54   |
|  | Municipal estate                            | 38.04   |
|  | Cess/LBT                                    | 15.88   |
| Revenue                                | Property tax                                | 14.38   |
|  | Pay and park                                | 36.63   |
|  | Licence fees                                | 24.85   |
|  | Town planning                               | 21.46   |
| Planning and regulation                | Encroachment                                | 22.25   |
| Public work                            | Road  | 18.45   |
|  | Street lighting                             | 36.51   |
| Urban forestry                         | Gardens                                     | 15.15   |
| Poverty alleviation and social welfare | Art and social welfare                      | 7.10    |
| Health                                 | Crematorium                                 | 30.96   |
|  | Malaria eradication                         | 44.04   |
| Solid waste management                 | Cattle pound                                | 4.42    |
|  | Solid waste management                      | 10.99   |
|  | Dumping ground                              | 135.72  |
| Civic amenities                        | Markets                                     | 49.05   |
|  | Fire brigade                                | –23.46  |
|  | Vishnudas Bhawe Auditorium                  | 5.81    |
|  | Water supply                                | 4.10    |
|  | Sewerage system                             | –18.03  |
|  | Morbe dam                                   | 28.69   |
|  | Tree authority                              | 7.68    |
| Urban forestry                         | Welfare schemes for schedule tribes and BPL | 26.59   |
|  | Public toilets in residential/slum area     | 27.66   |
|  | Women and child welfare schemes             | –28.39  |
| Health                                 | Public health and hospital service          | 12.66   |
|  | Primary education                           | –100.00 |
| Other services                         | Secondary and higher secondary education    | 19.78   |



The growth of revenue receipts through general administration services was 13.54 percent from 2001 to 2018. The general administrative receipts are higher because of recovery of government taxes (education cess, employment guarantee, tax, labour cess) penalty and interest income. The revenue receipts from municipal estate were 38.04 percent over the period of time. The receipts from municipal estate are higher because of office building rents, office canteen and other rent. The revenue receipts from LBT from 2001 to 2018 was 15.88 percent. LBT is higher because of LBT – industrial taxes, LBT wholesalers, LBT tax on retailers, new building construction, LBT and grant in aid from government. The revenue receipts from property tax were 11.92 percent. The property tax for Navi Mumbai Municipal Corporation includes commercial, residential and industrial property tax, property transfer fees. The revenue receipts from town planning were 21.46 percent. The town planning in corporation mainly comprises as development changes (building, permission, penalty, additional development charges and lastly security fees). The revenue receipts from encroachment were 22.25 percent. Receipts from encroachment means encroachment income (demolition of unauthorized construction, debris, construction material stage, weather shed, marginal open space permission/ fines etc. lastly, sale of forfeited material/scrap vehicles). The revenue receipts from licence fees were 24.85 percent. The municipal corporation charges licence fees and it included as income from advertisement such as banners, posters hoarding, shooting etc. hawkers licence, hotels, pet dogs, meat shops, licence transfer, storage and other, industrial, hospital marriage, penalty, cinema, theatre, show fees/tax, shooting fees. The revenue receipts from roads was 18.45 percent from 2000 to 2018. Various fees are charged by the Navi Mumbai Municipal Corporation related to roads. Road cutting fees are one of them. It also includes as tender fees, e-tendering sale and street tax. An important fee in corporation is charged to utilities, which cut roads for such purposes as laying the pipelines. Such revenues are, however, offset by the costs of repairing the roads and, therefore, cannot be viewed as a major net revenue source (Samad, 2009). But few percent is covered as road repairing charges.

The revenue receipts from street lightening was 36.51 percent from 2000 to 2018. The street light included as penalty/leader, van rent. The pay and park receipts was 36.63 percent. The revenue receipts from through gardens in city were 15.15 percent. The receipts from gardens comprises as sale of grass, fruits, nursery, dead and fallen trees, scrap sale, penalty. In Navi Mumbai Municipal Corporation, sale of grass and dead trees are more. Therefore corporation sales such trees and grass. The growth of revenue receipts from market was 49.05 percent. It includes receipts from milk centres and rent in corporation area. We found the negative receipts from the arts and social welfare (–6.96 percent) during the period 2000–2018. The receipts from arts and social welfare include gymnasium, samaj mandir, rent, library fees and penalty. The fees charged from samaj mandir, library and penalty is very low. It has not grown over the period of time. The revenue receipts from crematorium was 30.96 percent from 2000 to 2018. The crematorium includes crematorium fees, rent from space, sale of wood. The revenue receipts from cattle compound was only 4.42 percent. Cattle ponds comprises as fees, penalties, electric animal crematorium. The revenue receipts from solid waste have grown as 10.99 percent. The solid waste related receipts are from fines and sewage tax. The receipts from dumping ground have increased as 135.72 percent. The dumping ground receipts considered as debris, dumping ground fees, carbon credit. The revenue receipts from malaria eradication were 44.04 percent during 2000–2018. For malaria eradication, the municipal corporation provide fogging machines. It receives rent for machines. It also charge mosquito eradication penalty. The revenue receipts from fire brigade was negative (–23.46 percent) from 2000 to 2018. Receipts increased due to fire non-objection certificate, crackers sale, fun fare, other non-objection certificate, building inspection, fees, annual inspection of building, fire tax. The municipal corporation give all the no objection certificates through various departments. It charges fees for such certificates.

The revenue receipts from the Vishnu Das Bhawe Auditorium was 5.81 percent from 2000 to 2018. Such receipts are because of auditorium, rent, door keeper charges, rent of stage materials, rent

of other places, video shooting, board and canteen rent. Many dramas are regularly run whole day. The revenue receipts from tree plantation was 11.80 percent from 2000 to 2018. The tree authority receipts are as tree cess. The revenue receipts from water supply were 4.10 percent. Water supply receipts have increased from metered, unmetered, institutional, commercial sale of water to tanker, bulk of water sale, regularisation of water with illegal connection, penalty of misuse of water, water connection security fees, water tanker, rent, water benefit tax the revenue receipts from sewerage system was negative (–18.03 percent) from 2000 to 2018. sewage system receipts includes drainage connection charges, suction unit, fees, jetting machine, rent, up-front raw water sale, scrap material sale, penalty on unauthorized sewerage. The revenue receipts from Morbe Dam were 28.69 percent. Morbe dam receipts includes sale of water and royalty. The revenue receipts from welfare schemes from scheduled tribe and BPL was 26.59 percent. Such receipts have observed from photo pass fees. Now more scheduled tribe and BPL families applying for Adhar card, Caste certificates and other certificates.

The revenue receipts from public toilet and toilets in slum pockets were 27.66 percent. It means public toilets in residual and slums area includes receipts from toilets, rent. The expenditure on women and child welfare was negative (–28.39 percent). The receipts from public health and hospital services were 12.66 percent. Such receipts observed from OPD charges, IPD, inter trainings, ECG, X-ray, sonography, birth date, registration, etc. The primary education receipts was –100 percent from 2000 to 2018. The primary education receipts are as municipal education cess. Government does not get any revenue from primary education. The revenue from secondary and higher secondary was 19.78 percent. The receipts are considered as testing charges/school rent.

## 2.6. Revenue expenditure of municipal corporation

We have calculated the growth of subheads of revenue expenditure from 2000–2001 to 2017–2018. The growth of subheads is presented in the following table.

**Table 3.** The revenue expenditure of Navi Mumbai Municipal Corporation (CAGR) (from 2000–2001 to 2017–2018)

Source: As per Table 1.

| Categories                             | Revenue expenditure   | Per cent |
|--|---|----------|
| General administration                 | Corporates  | 18.18    |
|  | Municipal estate  | 45.06    |
| Planning and regulation                | Town planning   | –7.45    |
|  | Service encroachment  | 5.15     |
| Public works                           | Service road  | 11.74    |
|  | Street lighting   | 12.57    |
| Urban forestry                         | Lakes and ponds   | 69.13    |
|  | Gardens   | 21.82    |
| Civic amenities                        | Market  | 40.37    |
|  | Cattle pound  | –100.00  |
| Sanitation and SWM                     | Veterinary  | 30.67    |
|  | Solid waste management  | 18.86    |
|  | Dumping ground  | 33.19    |
| Health                                 | Environment monitoring  | 16.05    |
|  | Malaria eradication   | 11.79    |
|  | Crematorium   | 25.13    |
| Civic amenities                        | Primary health  | 31.74    |
|  | Fire brigade  | –13.80   |
|  | Vishnudas Bhawe Auditorium  | 11.30    |
|  | Disaster management & control room  | 13.51    |
|  | Sports & cultural programme   | 32.67    |
|  | Water supply  | 10.88    |
|  | Sewerage system   | 12.16    |
|  | Morbe general administrative expenses                                       | 8.51     |
|  | Art and social welfare centre   | 37.09    |
|  | Welfare schemes for schedule tribes and BPL                                 | 236.09   |
| Poverty alleviation and social welfare | Welfare schemes for backward class  | 62.80    |
|  | Education, training and service centre for persons with disabilities (PWDs) | 7.15     |
|  | Public toilets in residential/slum area                                     | 15.37    |
|  | Engineering works in urban poor areas                                       | 20.79    |
|  | Women and child welfare schemes (gender budget)                             | 42.81    |
| Other services                         | Public health and hospital service  | 23.59    |
|  | Primary education   | 5.21     |
|  | Secondary school department   | 7.11     |

The revenue expenditure growth on corporate's was 18.18 percent. Corporate expenditure means honorarium meeting allowance, meeting expenses, study tours, stationary printing, telephone, election, oil and fuel expenses, oil and fuel expenses, vehicle hire charges, salary of personal assistance and drivers, peon. The revenue expenditure

on municipal estate was 45.06 percent from 2000 to 2018. The municipal estate expenditure as receipts and maintenance office, residential building, repair and electrification of NMMC, building, water charges, property taxes, depreciation, salary and allowances, overtime, medical reimbursement, LTA and other administrative expenses. The expenditure on town planning was -7.45 percent from 2000 to 2018. The town planning expenses are salary and allowances overtime, medical reimbursement, LTA administrative expenses as travelling, consultation office expenses, and city survey and electricity charges. We have not found any growth in such expenditure by corporation over the period of time. The revenue expenditure on encroachment was 5.15 percent. Since establishment of Navi Mumbai Municipal Corporation, municipal corporation is very strict about encroachments on public land. Encroachment expenditure is related to encroachment squad, anti-debris squad encroachment, removal equipment. It is appointing regular staff for encroachment removal at public places. Therefore corporation need to pay salary, bonus, medical, LTA travelling, printing, stationary, office expenses and security guard contract. The revenue expenditure on roads was 11.74 percent. It means road repairs and maintenance to road, foot path, gutters in industrial roads also, repairs of nallahs in industrial area, repair and main bridges, flyover, storm water, pumping station. The revenue expenditure on street light was 12.57 percent. The revenue expenditure comprises as electricity charges, road and electricity charges in industrial area, repair and maintenance of street lights, traffic control room repair and maintains admin building school and other building and office buildings in corporation area. The revenue receipts on lakes and ponds were 69.13 percent. In Navi Mumbai Municipal Corporation, the money is spent on lakes and ponds as repairs and maintenance of lakes. The revenue expenditure on gardens was 21.82 percent. The gardens expenditure comprises as maintenance and protection of gardens all over city, water bills and repairs and maintain, pipe, pathway, gagging track gate, electric repair, salary allowance, overtime, medical LTA of workers and other office, expenses including printing and stationary. The revenue receipts on market were 40.37 percent. The expenses include repairs and maintenance, market shops. The revenue expenditure on arts and social welfare centre was 37.09 percent from 2000 to 2018. Such expenditure consists of repairs and maintenance,

gymnium/samajmandir, senior citizen facility, library, administrative expenses. The municipal corporation has established many social welfare centres in different sectors and spend maximum amount on such facilities. The revenue expenditure on crematories was 25.13 percent. The crematorium related expenditure comprises as operations and maintenance, crematorium operations and maintenance crematorium. It is a basic required expenditure in corporation area. The revenue expenditure was on cattle pond was -100 percent from 2000 to 2016. It is cattle ponds and cattle pond management. Such expenditure has declined and reduced over the period of time. The revenue expenditure from veterinary services was 30.67 percent. It is mainly comprises as veterinary, dog catching and sterilization expenses, rodent control, pig control, repair and maintenance of dog centres, bird and animals zoo, operation and maintenance expenses.

The revenue expenditure growth on solid waste management was 19.26 percent. It means sanitation expenses, repair of dustbins, garbage, transport expenses, MIDC transport expenses and city sanitation. It also pays corporation staff as salary, overtime, LTA, travel, office expenses. The revenue expenditure on dumping ground was 33.19 percent. The dumping ground expense comprises as security guard related salary and overtime expenditure, repair and maintenance and dumping expenses ground, e-waste. The expenditure on environment monitoring was 16.05 percent. The environment monitoring expenses are as writing environment status report of Navi Mumbai city, repair and maintenance, environment equipment. The municipal corporation has spent money on malaria eradication. The malaria eradication expenses are as medicines, pumps, human resource for it. The growth of such expenditure is observed as 11.79 percent from 2000 to 2018. The revenue expenditure on primary health care was 31.74 percent. The public health includes Reproductive Child Health/National Urban Health Mission, repairs and maintenance, trauma unit. The expenditure on fire brigade was -13.80 percent. The revenue expenditure on Vishnudas Bhave Auditorium was 11.30 percent. It comprises as light sound arrangement, air condition plant, repair and maintenance, generator expenses, water bill, repair and maintenance, security, gate keepers, program display board, painting, rodent control, salary, bonus, medical, office expenses. The revenue expenditure on disaster

management was 13.51 percent. The expenditure on sports and cultural programme was 32.67 percent. The revenue expenditure on water supply was 10.88 percent. The water supply expenditure includes purchase of water electricity, water pump, ESR-GSR repair, maintain bore wells, water tanker, oil, fuel, expenses, salary, overtime, medical, travel consultancy, stationary, oil and fuel, vehicle security

The growth of revenue expenditure on sewage system was 12.16 percent. The sewerage expenditure in Municipal Corporation comprises as jetting/suction unit, sewerage, treatment plant, repair, pipeline, medical, travel, consultancy, printing, oil and fuel. The revenue expenditure on Morbe general administrative expenses was 8.51 percent. It includes electricity charges, operation and maintenance of water supply, salary, allowance, overtime, travel, consultation and office expenses. The revenue expenditure on welfare schemes for schedule tribe and Below Poverty Line (BPL) was very high (236 percent). It means welfare schemes for ST and BPL and includes slum survey and photo pass. The revenue expenditure growth on welfare schemes for backward classes was 62.80 percent. The revenue expenditure on education, training and services centre from persons with disabilities was 7.15 percent. It comprises as nutrition, uniform, program activities training, survey site visit, free transport to students, operation and maintenance of centres travel overtime, LTA, travel electricity of office. The revenue expenditure on public toilets was 15.37 percent from 2000 to 2018. It includes repair maintenance, mobile toilet and open defecation free city. The revenue expenditure on women and child welfare scheme was 42.81 percent. The revenue expenditure on public health and hospital services was 23.59 percent. It comprises as surgical medicine, bio medical pathology, repair, maintain hospitals, sono-graphy, disposal of dead bodies, housekeeping, electricity water bill, hospital rent, and ambulance counselling. The revenue expenditure on primary education was 5.21 percent. Primary education means repair and maintenance of school, furniture, electricity, internet telephone. The revenue expenditure on engineering work in urban poor was 20.79 percent. The Engineering work in urban poor areas included as repair, maintenance to road, foot paths and gutters. The revenue expenditure growth on secondary school department was 7.11 percent from 2000 to 2018. The growth of revenue expenditure on secondary school as department included as vehicles,

salary, overtime, medical LTA, travel, electricity and office expenses.

## 2.7. Growth of capital receipts

We have calculated the annual compound growth rate of various subheads of capital receipts from 2000–2001 to 2017–2018. Such growth rate is presented in the following table.

**Table 4.** The capital receipts of Navi Mumbai Municipal Corporation (CAGR) (from 2000–2001 to 2017–2018)

Source: As per Table 1.

| Capital receipts               | Percent |
|--------------------------------|---------|
| General administrative service | 8.05    |
| Town planning                  | –9.00   |
| Fire brigade                   | –11.34  |
| Vishnudas Bhawe Auditorium     | 8.64    |
| Sports and cultural program    | 8.08    |
| Security deposit               | 2.72    |
| Water supply                   | –0.98   |

The capital receipts growth from general administrative services was 10.29 percent from 2000 to 2018. General and administrative services include housing loan recovery, vehicles and computer loan recovery. The town planning capital receipts was –3.76 percent from 2000 to 2018. Town planning receipts included as building permission deposit, tree planting SD, mosquito's eradication, deposit stack of material deposit, lease permission. Such capital receipts are declining in corporation area. The capital receipts growth from fire brigade was 10.29 percent. Fire brigade related capital receipts comprise as capital fees buildings, special building and capitalization fees. The capital receipts from Vishnudas Bhawe Auditorium (VBA) were 8.64 percent. It is considered as deposits by VBA. The capital receipts growth from sports and cultural programs were 8.08 percent. The capital receipts from security deposit were 10.94 percent. The capital receipts growth from water supply was 18.31 percent. It included as water connections, capital contribution, water connection, security deposit. The water supply connections, water tariff is increasing fast in corporation area.

## 2.8. Capital expenditure of corporation

We have also calculated the growth rate of the subheads of capital expenditure from 2000–2001



to 2017–2018. It is presented in the following table.

**Table 5.** The capital expenditure of Navi Mumbai Municipal Corporation (CAGR) (from 2000–2001 to 2017–2018)

Source: As per Table 1.

| Categories                             | Capital expenditure   | Per cent |
|--|---|----------|
| General administration                 | Corporates  | 48.60    |
|  | General administrative service  | 21.96    |
|  | Municipal estate  | 3.01     |
|  | Road  | 18.40    |
| Public works                           | Street lighting   | 7.55     |
|  | Pay and park  | 26.95    |
| Planning and regulation                | City beautification   | 45.43    |
| Urban forestry                         | City beautification   | 9.23     |
|  | Gardens   | 14.24    |
| Poverty alleviation and social welfare | Gardens   | 42.12    |
| Health                                 | Art and social welfare centre   | 50.18    |
| Sanitation and SWM                     | Crematorium   | 32.07    |
|  | Dumping ground  | 100.58   |
| Civic amenities                        | Environment monitoring  | -12.39   |
|  | Fire brigade  | 44.49    |
|  | Vishnudas Bhawe Auditorium  | 86.10    |
|  | Disaster management and control room  | 51.09    |
|  | Sports and cultural program   | 83.25    |
|  | Providing civic amenities in condominium                                    | -11.05   |
|  | Water supply  | 10.96    |
|  | Sewerage system   | 42.08    |
|  | Tree authority  | 17.31    |
|  | NMMT grant  | 35.61    |
| Loans and grants                       | Security deposit  | 7.63     |
|  | Loan/finance from institutions  | 30.76    |
|  | Morbe dam   | 33.66    |
| Poverty alleviation and social welfare | Welfare schemes for schedule tribes and BPL                                 | 120.09   |
|  | Welfare schemes for backward class  | 42.25    |
|  | Education, training and service centre for persons with disabilities (PWDs) | -0.06    |
| Health                                 | Public toilets in residential/slum area                                     | 49.52    |
|  | Public health and hospital service  | 8.66     |
| Poverty alleviation and social welfare | Engineering works in urban poor areas                                       | 33.55    |
| Other services                         | Primary education   | 24.41    |
|  | Secondary and higher secondary education                                    | 11.81    |
| Grants and loans                       | Jawaharlal nehru national urban renewal mission (JnNURM-I)                  | -100.00  |
|  | Jawaharlal nehru national urban renewal mission (JnNURM-II)                 | -100.00  |

The capital expenditure growth from corporation was 48.60 percent from 2000 to 2018. The capital expenditure growth on general administrative was 12.52 percent. Total administrative expenses consist of expenses on administration. The capital expenditure on municipal estate was 8.57 percent from 2000 to 2018. Total municipal estate consists of construction of building and offices, transit camp, construction of go downs, purchase of land, construction of compound wall, development of open land. The capital expenditure on roads was 18.40 percent. Roads related expenditure consists of construction of roads, footpath, gutters and nallah in residential and industrial area, construction of bridges and flyovers. The capital expenditure on street lightening was 7.55 percent. Street light expenditure is road electrification, electric instruments, new electric connections, road electrification, street improvement, traffic control work, underground electric cable, building electrification, hydro power project, construction of data centre, smart city (Wi-Fi city), C.C.T.V, solar plant. The capital expenditure on pay and park was 26.95 percent from 2000 to 2018. Pay and park means expenditure on truck terminals. The capital expenditure on city beautification was 45.43 percent. The capital expenditure on gardens was 14.24 percent. Gardens related expenditure mainly comprises as children's garden, scientific museum, garden development and development of park for senior citizens, water pipe and pathways, jogging track gate work, water supply system in garden (pipeline, fountain, sprinkler and drip irrigation). Municipal corporation is developing gardens in all sectors. Art and social welfare centre expenditure related to construction of gymnasium and Samaj Mandir, library, marriage hall, multi-purpose library, book purchase, furniture purchase for library, UID card and central library. The capital expenditure on crematorium was 32.07 percent from 2000 to 2018. The crematorium related expenditure is related to construction of crematoriums in all sectors of city. The capital expenditure on dumping ground was 100.58 percent from 2000–2018. Dumping ground expenditure means development of dumping ground, waste processing unit. The capital expenditure on environment monitoring was -12.39 percent. Environment monitoring require expenditure and it is related to green housing concept, solar heaters, water re-cycling, self-generated eco city. The

capital expenditure on fire brigade was 44.49 percent from 2000–2018. Fire brigade expenditure is related to vehicle/ pump purchase, purchase fire material, fire protection fund. The capital expenditure on Vishnudas Bhawe Auditorium was 86.10 percent. Vishnudas Bhawe Auditorium related expenditure means development of auditorium, auditorium building beautification; air-condition up-gradation and purchase. The capital expenditure growth on disaster management and control room was 51.09 percent. The capital expenditure growth on sport and cultural program was 83.25 percent. Sports and cultural programs expenditure includes construction of sports complex, indoor game stadium, swimming pool.

The growth of capital expenditure on tree authority was 17.31 percent. The capital expenditure on NMMT grant was 35.61 percent. Navi Mumbai Municipal Corporation receives central government grant for transport and buses. They are transferred to corporation. The capital expenditure on finance to institutions was 37.89 percent. The security deposit CAGR was 24.23 percent from 2000 to 2018. Security deposit comprises as SD refund and refunds to contractors. The capital expenditure on water supply was 30.76 percent. Water supply expenditure is new water supply connections- capitation fees, security deposit, construction of ESR/GSR, new water connection and pipeline work, new bore well, water supply fund. The capital expenditure on Morbe dam was 33.66 percent. The capital expenditure on welfare schemes for scheduled tribe and BPL families was 120.09 percent. Such expenditure comprises as construction of shelter to adwasis, slum development in corporation area. The capital expenditure on welfare schemes for backward class was 42.25 percent. The capital expenditure on education, training and service centre for persons with disabilities was –0.06 percent. The education and training with disabilities includes as purchase, furniture, equipment therapy and diagnosis equipment's, creating barriers free environment for public work departments. The capital expenditure on public toilet in residential/slum area was 49.52 percent. Public toilets related expenditure comprises as toilet constructions in slum area and e-toilets. Public toilets expenditure comprises as construction of public toilet, swaccha Navi Mumbai mission. The capital expenditure during 2000–2018

on public health and hospital services was 8.66 percent. It comprises as construction of hospitals, hospital equipment's, construction of trauma unit, trauma unit equipment. Capital expenditure growth on primary education was 24.41 percent. Primary education related capital expenditure means construction of schools, Fire extinguisher, purchase school benches in corporation area. It is regularly done in corporation as far as primary education is concerned. An engineering work in urban poor area was 33.55 percent from 2000–2018. Engineering work expenditure is related to construction of Road, Footpath and Gutters all over corporation area. The capital expenditure for providing civic amenities in condominium was –11.05 percent. The civic amenities expenditure includes replacement of water pipeline. Now most of the water supply pipelines are new in municipal corporation area. Therefore, they are not required to change. Therefore the capital expenditure on civic amenities in condominium was negative over the period of time. The capital expenditure growth of municipal corporation for the secondary and higher secondary education was 11.81 percent. The capital expenditure as Jawaharlal Nehru Urban Renewal Mission (JNNURM) 1 and 2 is nil. The JNNURM expenditure means JNNURM project cost, augmentation of sewerage system, Implementation of e-governance, rejuvenation of storm water system, corridor improvement plan for Palm Beach road, integrated solid waste management project. JNNURM-2 expenditure means JNNURM project cost, rejuvenation of storm water system central/state share and rejuvenation of storm water system municipal share. Cattle ponds related expenditure means construction of cattle ponds, veterinary related expenditure includes as construction of dog centre, construction of veterinary hospital and slaughter house, electric animal crematorium in corporation area. Solid waste management expenditure in corporation area is related to garbage equipment/dustbins, purchase of dustbins, litter bins, sinking fund. It is increasing in municipal corporation area. Sewage system includes GES sewage scheme, recycling, upgrade sewerage station, sewerage fund. Total basic services mainly included as expenditure on replacement of water pipelines, replace sewerage pipelines, roads, footpaths. The capital expenditure on all basic services is increasing now and in future also it will increase with increase in population.



The capital expenditure on basic services in corporation will increase continuously for the next few years.

### 3. REGRESSION RESULTS

In order to study the relationship of different variables with the revenue receipts and expenditure, capital receipts and expenditure, we have used ordinary least square regression model (Greene, 2003). The regression model is defined as follows:

$$Y_{it} = \alpha + \beta x_1 + \beta x_2 + \beta x_3 + \beta x_4 + \dots + \epsilon, \quad (11)$$

where  $Y_{it}$  is the dependent variable and it is considered as municipal corporations revenue receipts, revenue expenditure, capital receipts and capital expenditure over the period of time. The independent variables are considered as the sub-head of each revenue and expenditure.

**Table 6.** Regression result of revenue receipts

| Variables  | Coefficient        | T-test   |
|--|--------------------|--|
| LBT  | 0.84** (0.20)      | 4.15   |
| Property tax                                     | 2.20*** (0.57)     | 3.86   |
| Town planning                                    | 1.17** (0.25)      | 4.57   |
| Women and child welfare schemes                  | 3.83* (4.06)       | 0.94   |
| Constant   | -5385.81 (5970.94) | 0.90   |
| $R = 0.99, R^2 = 0.99,$<br>Adjusted $R^2 = 0.99$ |                    | Std. error of the<br>estimate = 3649.65 $F = 283.73$ |

Note: Figures in brackets are standard error, \* significant at 1 percent, \*\* significant at 5 percent, \*\*\* significant at 10 percent.

Local body tax is positively co-related with revenue receipts. Local body tax is a good source of revenue. LBT in corporation area is higher because LBT on industrial taxes, LBT wholesalers, LBT tax on retailers, new building construction, LBT and grant in aid from government. Property tax is paid on real estate, which is owned by the businessman and common residents. Property tax is levied on the basis of rentable value of the property. The property tax includes commercial, residential and industrial property tax, property transfer fees. The built up area is increasing in corporation area therefore the property tax collection is also increasing. The town planning is positively co-related with revenue receipts. The municipal corporation has invested too much in town planning. The town planning mainly comprises as de-

velopment changes and it includes building, permission, penalty, additional development charges and lastly security fees. Therefore, it is positively co-related with revenue receipts. The expenditure on women and child welfare schemes is positively co-related with revenue receipts. The municipal corporation has spent money on women and child welfare schemes. Therefore, it is positively co-related and statistically significant.

**Table 7.** Regression result for revenue expenditure

| Variables                               | Coefficient        | T-test   |
|---|--------------------|--|
| Municipal estates                       | 2.38** (0.23)      | 10.26  |
| Public health and hospitals             | 6.10** (0.27)      | 22.63  |
| Primary education                       | 1.25 (0.43)        | 2.89   |
| Engineering works in urban poor         | -18.29 (5.91)      | -3.09  |
| Secondary school department             | 82.69** (11.59)    | 7.13   |
| Constant                                | 13345.17* (910.25) | 14.66  |
| $R = 1, R^2 = 1,$ Adjusted $R^2 = 0.99$ |                    | Std. error of the<br>estimate = 35.51 $F = 681.31$ |

Note: Figures in brackets are standard error, \* significant at 1 percent, \*\* significant at 5 percent, \*\*\* significant at 10 percent.

The revenue expenditure is positively co-related to municipal estates. The municipal estate expenditure as receipts and maintenance office, residential building, repair and electrification of municipal corporation, building, water charges, property taxes, depreciation, salary and allowances, overtime, medical reimbursement, LTA and other administrative expenses. The municipal corporation has spent maximum resources on development of municipal estates in corporation area. The municipal corporation is spending more resources on public health and hospitals. It comprises as surgical medicine, bio medical pathology, repair, maintain hospitals, sono-graphy, disposal of dead bodies, housekeeping, electricity water bill, hospital rent and ambulance counselling. Most of the poor people are getting treatment in various hospitals in corporation area. The municipal corporation is spending more on the primary education. Primary education means repair and maintenance of school, furniture, electricity, internet telephone. It is a huge expenditure for corporation every year. An engineering works in urban poor is negatively co-related with revenue expenditure. It is statistically significant with revenue expenditure. The Engineering work in urban poor areas included as repair, maintenance to road, foot paths and gut-

ters. The municipal corporation is spending more on the secondary school department. Such relationship is positively co-related and statistically significant. The secondary school in department included as vehicles, salary, overtime, medical LTA, travel, electricity, office, expenses. Money is spent regularly on secondary education in corporation area.

**Table 8.** Regression results for capital receipts

| Variables                                   | Coefficient                        | T-test       |
|---|------------------------------------|--------------|
| Fire brigade                                | 1.32* (0.08)                       | 15.65        |
| V.B. Auditorium                             | 13.08 (5.00)                       | 2.61         |
| Sport and cultural program                  | 5.15** (1.11)                      | 4.61         |
| Security deposit                            | 1.06* (0.02)                       | 44.04        |
| Water supply                                | 1.23* (0.28)                       | 4.35         |
| $R = 1$ , $R^2 = 1$ , Adjusted $R^2 = 0.99$ | Std. error of the estimate = 35.51 | $F = 681.31$ |

Note: Figures in brackets are standard error, \* significant at 1 percent, \*\* significant at 5 percent, \*\*\* significant at 10 percent.

The capital receipts from the fire brigade are positively co-related and statistically significant. Fire Brigade related expenditure comprises as capital fees, buildings and special building and capitalisation fees. The capital receipts from Vishnudas Bhawe Auditorium (VBA) are positively co-related and statistically significant. It is mainly because many people regularly come to watch various dramas. The maximum revenue is generated for municipal corporation from auditorium. It is also considered as deposits by VBA. The capital receipts from the sports and cultural programs are positively co-related and statistically significant. In municipal corporation area, many shows are regularly conducted and sports activities are conducted. Therefore, it is statistically significant and positively co-related with capital receipts. The security deposit is positively co-related to capital receipts and it is statistically significant. The capital receipt from water supply is positively correlated and statistically significant. The water supply

provides revenue to municipal corporation. It included as water connections, capital contribution, water connection, security deposit. Such receipts will increase over the period of time.

**Table 9.** Regression results for capital expenditure

| Variables                                   | Coefficient                           | T-test        |
|---|---------------------------------------|---------------|
| Women and child welfare schemes             | 63.34** (6.11)                        | 10.35         |
| Primary education                           | 51.31* (0.83)                         | 61.43         |
| Dumping ground                              | -35.16** (2.00)                       | -17.53        |
| Environment monitoring                      | 7.23 (23.01)                          | 0.315         |
| Constant                                    | 9946.13** (1461.74)                   | 6.80          |
| $R = 1$ , $R^2 = 1$ , Adjusted $R^2 = 0.99$ | Std. error of the estimate = 1542.030 | $F = 2063.27$ |

Note: Figures in brackets are standard error, \* significant at 1 percent, \*\* significant at 5 percent, \*\*\* significant at 10 percent.

The capital expenditure on women and child welfare schemes are positively co-related and statistically significant in corporation area. The municipal corporation has done more expenditure on women and child welfare schemes. The capital expenditure on the primary education is positively co-related and statistically significant. Primary education expenditure by corporation is related to construction of new schools, fire extinguisher and purchase school benches in different schools. The capital expenditure on dumping ground is negatively co-related and statistically significant. Dumping ground expenditure is related to development of dumping ground, waste processing unit in corporation area. The capital expenditure on environment monitoring is positively co-related and statistically significant in Navi Mumbai Municipal Corporation. Environment monitoring requires expenditure and it is related to innovative ideas such as green housing, solar heaters, water re-cycling, self-generated eco city. Municipal corporation is spending on environment monitoring but numbers of projects are few.

## CONCLUSION

The Navi Mumbai Municipal Corporation was expected to provide integrated civic infrastructure facilities to people. This is because the constitutional mandate has given functional and financial autonomy to elected local bodies so as to make effective instrument of decentralization. But the present framework does not allow this municipal corporation to perform better. The local bodies in Maharashtra are highly controlled and regulated by state and central government (Saruparia Chitra, 2013). In fact, the Navi Mumbai was planned to decongest Mumbai city. After its establishment, city industrial development

corporation and state government created physical infrastructure. While planning, the care is taken of open spaces, play fields, adequate and affordable housing, planned manufacturing units and industries. Roads and railway stations are built in a systematic way to cater the future growth of population in city. For water supply, municipal corporation took over the Morbe dam, which supplies water for 24\*7 basis. After its establishments, many public sector projects are brought in corporation as well as outside corporation area. The Agriculture Produce and Marketing Corporation (APMC), Jawaharlal Nehru Port Trust, RBI office, CIDCO Bhavan, New International airport have given the boost for the growth of municipal corporation. All nodes such as Airoli, Ghansoli, Koparkhairne, Juhunagar, Vashi, Turbhe, Sanpada, Nerul, Belapur and Kharghar have well developed over the period of time. Municipal corporation has created good civic infrastructure in all nodes. The municipal corporation developed lakes and ponds, gardens, markets and resources are invested after its establishment. The solid waste is collected all over city. Money spent on the welfare of the scheduled caste, tribe in corporation. Municipal corporation also receives the funds from LBT, property tax, license, pay and park, markets. It also has high receipts from water supply, Vishnudas Bhave Auditorium. Municipal corporation does not get revenue receipts from arts, social welfare, fire brigade, sewerage system, women and child welfare schemes, primary education. The revenue expenditure is co-related to town planning, roads, cattle pounds, fire brigade.

The capital receipts are more from general administrative services, Vishnudas Bhave Auditorium, sports and cultural programs, security deposits. The capital receipts are low from fire brigade and water supply. The capital expenditure is low on environment monitoring and education training and service centres for persons with disabilities. The capital expenditure is more on administrative services, roads, pay and parks, city beautification, gardens, dumping grounds. Similarly fire brigade, environmental monitoring, Vishnudas Bhave Auditorium, sports and cultural programs, sewage system has spent more money in corporation. The welfare schemes for SC and ST, primary and secondary education, health care also given importance in capital expenditure. The municipal corporation is spending money on providing infrastructural services in developed areas. Recently, the central government has ranked Navi Mumbai as third clean city in India. Navi Mumbai has top notch hospitals educational institutions, malls, modern infrastructure and railway stations, wide roads, unrestricted power and planned water supply. New projects are planned near to corporation area such as new international airport, JNPT, metro rail, Trans harbour link, affordable housing expansion, Navi Mumbai airport influenced notified, trans-harbour link, affordable housing, highway expansion, Navi Mumbai Airport Influenced Notified Area (NAINA). Navi Mumbai has planned modern infrastructure huge open spaces and recreation areas. Navi Mumbai emerged as a powerful magnet for entrepreneurship and employment opportunities. It may turn out to be an excellent care for reverse migration. But we found number of problems in corporation area. Therefore, Municipal Corporation must implement following policies to overcome with various issues. It is observed that municipality has led to a quite low utilization of debt instruments (Spacek & Dvorakova, 2011). Municipal bonds are a feasible tool for financing civic infrastructure projects in corporation. The municipal bonds may play a crucial role for finances of corporation and enable them to move towards raising resources (Nallathiga & Ramakrishna, 2015). Municipal corporation must increase its financial capacity through debt instruments. All over the world, the municipal corporations are already using municipal bonds to raise financial strength from capital market. Municipal corporation must spend more on women and child welfare schemes. Urban poor must be given more priority in each budget. Secondly, primary education must be paid adequate attention. Industries are destroying the environment through polluted water and air pollution. The corporation must take strict action and control the pollution of polluting industries. In the corporation, environment degradation is taking place at larger extent. The mangroves are cut and wetlands are destroyed. Municipal corporation must develop coastal line, protect forests. Environment friendly situation must be created in corporation area. Municipal corporation must spend more on cameras, security, wall compound and electricity connections and poles near protected forests. Municipal corporation must spend more money on town planning. Municipal corporation is collecting solid waste from developed area. The biomedical waste; solid waste separa-

tion and processing must be given priorities in corporation area. It must create environment friendly atmosphere in corporation. Municipal Corporation should not develop its area with only commercial interest. The culture, education, health, environment, technology up gradation for human development are equally important. Otherwise municipal corporation will be developed corporation with poor socio-economic background of its people. Development now viewed as dynamic process rather than only commercial development of any area. Municipal corporation must develop best destination to live and work for its own people.

## NOTES

1. The Navi Mumbai Municipal Corporation was given charge of nodes on January 1, 1998. Therefore, budgets for municipal corporation is available from 2000–2001 to 2017–2018. In this study, such budgets are analyzed.
2. Few figures of revenue and capital receipts and expenditure of budgets from 2000 to 2001 are not available. Therefore, we have excluded such series from calculation of annual compound growth rate.

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