Chapter - III

Cost, Profitability and Operational Dynamics
Chapter III

COST, PROFITABILITY AND
OPERATIONAL DYNAMICS

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Introduction:

The word "cost" has different meanings under different circumstances. It is not only the expenses incurred but it is more than that. The chapter explains the same in the first part. Both Economist and Accountant, differ considerably while defining the cost. If one has to think viability of business on scientific lines, he has to deal with the number of transactions under various managerial dynamics. The chapter explains the theoretical aspects of the costs with the help of diagram and also analyses the model cost-profit-volume for APT Business with the help of Break-Even Analysis. The practical aspects of BEP are also considered.

After having been considered the costs from the various dimensions, the chapter delineates the cost-profit-volume, of the APT Business on the basis of empirical investigation conducted at Aurangabad and Poona. Since this analysis is based on the collected data, the conclusions or derivations articulated in the chapter have practical utility. The scientific efforts are made to know the operations of APT Business.

Cost Analysis:

Before going to delineate the cost of APT business, it is appropriate to know the "Cost" from
the various angles of vision in the context of APT cost. The following pages briefly deal with the same.

The accountant generally estimates the cost with his traditional methods i.e. income statement, expenditure statement, balance sheet, etc. in accordance with legal requirement. For example, he takes into account only that quantum of depreciation on vehicle which is authorised by the Income Tax Authorities. The cost accountant, however, has to go beyond that and considers the depreciation in the light of the factual realities. The managerial economist having cost vision transforms the financial data into the special purpose costs, which assist to solve the number of problems while managing the APT business with profits.

This calls for an analysis of data, based upon economic financial, statistical and engineering variables, so as to derive conclusions for the managerial uses. The rules of conventional cost estimates are translated for the decisions concerning to managerial uses. Hence, a separate treatment to APT operational cost is inevitable from the managerial point of views.

The accounting costs assists to understand comparative stats of business for two different events or business but it cannot be useful for planning in
isolation. APT business cost when considered in the context of planning it should provide the right choice between alternative plans.

**Conceptual Difference - Economist and Accountant:**

While measuring the profits, both the economist and accountant agree that profit is nothing but the difference between cost and revenue. While cost refers to the summation of all costs, revenue refers to the sale proceeds of goods and services. Where, then, do they disagree with each other? And why should they disagree? How do they measure profits? As far as revenue are concerned, there is no disagreement, for there can be no dispute about whatever flows as sale proceeds; no calculation or computation is involved. But when costs are to be arrived at, both the economist and the accountant arrive at them in an own individual way. This is so because of the fact that they took at costs from different points of view.

The accountant determines the cost of any asset (say auto-rickshaw) by taking into account the actual money spent on the item. In other words, he considers only the actual cost, which is known as acquisition cost. This acquisition cost merely tells us about the cost or amount of possessing auto-rickshaw. On the other hand, the economist spells out
the cost in terms of opportunity cost; that is to say, by the cost of holding the factor from its alternative use. Therefore, the economist recognizes the problem of choice faced by a vehicle operator in utilising its resources. This may be made clear by taking an example.

The opportunity cost of auto-rickshaw vehicle may be more or less than acquisition cost or accountant cost. Assume, for example, that the operator has acquired an auto-rickshaw by paying Rs. 50,000/-. This is actual cost as well as the acquisition cost. Therefore, this is the accountant cost. Assume now that the cost of auto-rickshaw has risen next day to Rs.55,000/-. The accountant tells that the cost of auto-rickshaw is Rs.50,000/- minus authorised depreciation. The economist tells the cost of auto-rickshaw is Rs. 50,000/-. Why? Because the accountant calculates the cost on the basis of what has been paid out — that is Rs. 55,000/-; but the economist pleads that if the operator desires to possess another auto-rickshaw, he has to pay Rs. 55,000/-, hence his already purchased vehicle bears the same cost and which is known as opportunity cost. Hence, not historical cost but market cost of vehicle should be the base for profitability calculations.
Similarly, (other example), vehicle owner when he drives his vehicle on his own, he is not required to pay himself for his work. So his work cost, as per accountant view to business is "Nil". However, if the owner works somewhere as driver, he may get Rs.1,000/- wage per month. The same is opportunity cost which is considered by the economist.

Various Cost Concepts and Their Significance in APT Business:

After considering economist view on cost, it is logical to understand the various cost concepts and their applicability to APT Business, while ascertaining the cost-profit and sales volume of APT business. It is, in other words, logical to understand the various cost concepts in the context of auto-rickshaw operations.

Variable Cost:

This cost varies along with the increase in kilometres operated by vehicle. These costs are

APT business owners do not have with vision to take business decision based on opportunity cost. He believes in Accountant’s cost and is anxious in recovering the amount which in invested in auto-rickshaw. APT owners’ expectation of return are lower than those who are new entrant in business investing in the vehicle much larger amount than the operators already in APT business.
repairs and maintenance, depreciation and fuel costs. When auto-rickshaw is operated more and more, these costs do increase. In other words, higher the scale of auto-rickshaw operation, the greater would be the volume of fuel requirements and therefore the higher would be the variable costs. On the other hand, if the vehicle is operated on low scale, the fuel used would be smaller in quantity, the expenses would be low and therefore the variable costs would also be low. Thus, the variable costs are directly related to the scale of operation of auto-rickshaw or kilometres run. This is shown in the diagram below:

Diagram No. 3.1: Fixed and Variable Cost of APT Business.

\[ OP = \text{Fixed Cost} \]
\[ LNPS = \text{Variable Cost} \]
\[ OP + LNPS = \text{Total Cost} \]

The diagram shows that variable costs rise as with the increase in proportion of operation of ki-
kilometres. However, the variable costs after some phase of operation of auto-rickshaw increase more than proportionately. In other words, it does not increase in the same rate as before. This is because of over use of vehicle causing to increase fuel, depreciation and R & M costs more than proportionately. This is identified as the disadvantages of the large scale operations.

The fixed cost of auto-rickshaw operation includes rent, salaries, interest, taxes, etc. which do not change materially with increase in vehicle operation. These costs have to be incurred whether vehicle is operated or not. It appears that the fixed costs in APT Business are not at all related to the level of output. This explanation helps one to know the distinction between fixed and variable costs of APT Business.

The diagram No. 3.1 clearly points out that how the fixed costs remain constant at all the levels of output of the vehicle operations. These costs are incurred even though there is no vehicle operation.

**Average Fixed Cost and Average Variable Cost:**

Total fixed cost incurred for APT business when divided by number of kilometres operated, one
gets average fixed cost (AFC). The same i.e. AFC declines or reduces with increase in the scale of auto-rickshaw operation. This is explained by the following diagram:

Diagram No. 3.2: Fixed Cost (FC) and Average Fixed Cost (AFC) of APT Business.

The diagram suggests that if one desires to reduce incidence of AFC "Smaller and Smaller", he has to operate the vehicle more and more. Such increase in scale of operation, however, needs ever increasing demand for the APT business from the people.

Total variable cost divided by total kilometres operated, we get average variable cost

1. It is assumed that each and every kilometre fetches revenue at a steady rate of fare.

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(AVC) per kilometer of operation. It is assumed that the variable cost is directly related to kilometres of vehicle run. In other words, it bears a linear relation with the scale of vehicle operation.

The AFC and AVC cost can be shown in diagram as below:

Diagram No. 3.3: Average Fixed Cost (AFC) and Average Variable Cost (AVC) for APT Business.

\[
\begin{align*}
&\text{Kilometres operated} \\
&M \\
&\text{Cost in Rs.} \\
&\text{Average variable cost per Km.} \\
&T \\
&\text{Av.fixed cost per Km.} \\
&\text{AFC} \\
&0
\end{align*}
\]

The above diagram shows that AVC per km. remains the same at any level of auto-rickshaw operation. However, AFC falls as the level of auto-rickshaw operation increases.

**Average Total Cost (ATC):**

Total cost, consisting of fixed and variable cost when divided by number of kilometres operated, we get average total cost (ATC). The "ATC" of auto-rickshaw operation, with increase in the scale of
operation goes on falling, because the element of average fixed cost in the ATC, goes on reducing. However, this is theoretically true, in actual practice when auto-rickshaw is being operated on large scale, the AVC at some point of operational phase, starts increasing. This is shown in the following diagram:

Diagram No. 3.4: Average Total Cost (ATC) of APT Business.

The ATC falls, as the element of AFC in ATC falls. OT is such scale of auto-rickshaw operation where ATC is minimum and production is optimum from the given auto-rickshaw. After OT scale of vehicle operation, there has been increase in the AFC because of diseconomies in the large scale operation of vehicle. The operator may produce or operate his vehicle beyond "OT" scale, if he gets average revenue (AR) per kilometer more than ATC.
Revenue and Profitability:

Auto-rickshaw operation is undertaken for earning profit. In order to get profit, the operator should reach to position as:

\[ \text{Total Revenue} - \text{Total Cost} = \text{Profit} \]

In other words, it means that:

\[ \text{Total Revenue} - (\text{Fixed} + \text{Variable Cost}) = \text{Profit}. \]

The fixed cost, variable cost and revenue are shown in the following diagram, which is graphical presentation of Break Even Analysis.

The diagram tells that PS is the level of auto-rickshaw operation, where fixed costs (FC) are recovered and hence there is "NO PROFIT - NO LOSS" situation (Break Even Point-I).

Diagram No. 3.5: Profit-Volume-Cost Level Model for APT Business.

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BEP = Break Even Point
TC = Total Cost
VC = Variable Cost
FC = Fixed Cost
RC = Revenue Curve

Kilometres operated
If the level of operation is more than "PS", the operator starts earning profit, which is highest i.e. BT at PH level of auto-rickshaw operation (Break Even Point-II).

The aim of auto-rickshaw operator would be to reach "BT" profit level. After this, the profit size starts shrinking on account of the following reasons:

(i) Variable cost increases disproportionately due to diseconomies in large scale operation of the vehicle.

(ii) Demand for auto-rickshaw for travel reduces on account of market saturation.

The Break-Even Analysis, when it is, (after PH level of operation) explained in the light of realities (as mentioned above i.e. I, II) shows that operator may reach to PC level of large size output where there is "No Profit or No Loss" (Break Even Point-III). This situation shows that the production of auto-rickshaw services or operations is the highest. However, no private auto-rickshaw operator can do such venture of public service. Only publicly owned transport company i.e. MSRTC can think of such level of production for the use of the large number of
people. At this point known as Break Even Point-III, the large volume of the transport operation could be effected without any profit.

**Traceable and Non-Traceable Cost:**

Generally, when the total cost of auto-rickshaw per kilometer operation has to be analysed, it has to be broken into the cost of fuel, repairs and maintenance, driver’s wages etc. In this process of breaking up or analysing costs, some difficulties arises, for example, the total cost of the Repairs and Maintenance incurred for auto-rickshaw can not be known at any given event for specific operation. In order to solve this problem, the total Repairs and Maintenance cost is divided by the total number of kilometres operated to arrive at the average R & M cost of auto-rickshaw per kilometer. If the cost of R & M is Rs. 2,000/- for 20,000 Kms. of operation of vehicle in a year, it may be said that the R & M for auto-rickshaw operation amounts to 10 paisa per kilometers (Rs. 2000 / 20,000 Kms.). The amount of R & M expenses may be derived at any event for the specific operation at the rate arrived as above. Thus, with this method untraceable cost can be made traceable. Fuel cost is traceable since it is directly related to kilometer of operation of the vehicle.
Cash Cost and Book Cost:

A cash cost is one which involves immediate current payment as opposed to the book cost. For example, a cash cost of fuel for vehicle is one which is the cost to be met immediately. On the other hand, a book cost is cost of those items for which payment need not be made immediately. For instance, depreciation of vehicle does not require immediate cash payment, and therefore, the operator does not account the same into current expenditure. Joan Deal calls cash cost as an out-of-pocket cost. If auto-rickshaw operators gets inputs on credit, the out of pocket cost settlements are temporarily postponed.

Incremental Cost:

Incremental costs are added cost; for example, cost of new vehicle is added cost when it is more than the cost of vehicle purchased in past. When some operators work with low priced vehicles obtained sometimes in the past, they unknowingly do not thought the additional cost of new vehicle for taking any decision to operate vehicle on the profit. For example, a operator who purchased his vehicle sometimes in the past for Rs.10,000/-; may be willing to operate his vehicle at the rates lower than that are prevailed or fixed by the RTO. As against this, the operator who has just purchased his vehicle for Rs.55,000/-, is
unwilling to drive his vehicle less than the price fixed by RTD or prevailed in the market through the demand and supply forces.

Sunk Cost:

Sunk cost is the cost which is incurred sometimes in the past. It cannot be changed. It stimulates the operator of vehicle to offer his services at lower price under the circumstances when sunk cost is less than existing incremental cost of the vehicle.

Postponable Cost and Non-postponable Cost:

Postponable costs are those which can be postponed by the vehicle operator. For example, cost of painting the vehicle or changing its hood or the front-screen may be postponed, since it does not affect the vehicle operation immediately.

A non-postponable cost is one which cannot be avoided or postponed; for example, the cost of replac-

Note: RTD fare price is fixed for reducing monopoly of the operators. But when there is a high demand for auto-rickshaw, the operators are tempted to increase the fare price more than the RTD fare. Under these circumstances those who have low priced vehicle, do not insist for elevated fare rates.
ing the vehicle machinery part. The auto-rickshaw vehicle operator has the following costs, which may be postponed:

(i) Cost of Repairs and Maintenance to the vehicle excepting machinery and wheels.
(ii) Insurance, taxes and other RTD expenses.
(iii) Depreciation charges.
(iv) Drivers’ salaries.
(v) Interest payment on the borrowed capital.
(vi) Garage rent.

Many auto-rickshaw owners in Aurangabad have a practice to postpone the above costs, since their income from business is very low. The examples of non-maintained auto-rickshaws are many. Four out of ten vehicles are found improperly maintained. Excepting machinery repairs, other repairs to vehicles are neglected. Half of the auto-rickshaw owners who were interviewed in the experience survey did not pay insurance, taxes, etc. regularly. A practice of setting aside the amount for vehicle depreciation from the receipts is observed by very few vehicle owners.

Since the auto-rickshaw are mostly operated by the owners, there is no question arise in the case of many for the salary payment to drivers. In other
words, this cost is kept un-noticed or postponed indirectly while ascertaining profitability by un-enlightened operator.

About the loans taken for the vehicle, there is a practice of paying some portion, to keep the banker satisfied. This practice entails the postponement of interest payment.

Replacement or Historical Cost:

A historical cost for the vehicle is the cost originally paid in order to acquire the vehicle. According to the accounting principles, the original cost is shown in the balance sheet. A vehicle replacement cost, on the other hand, is the cost prevalent in the market for the vehicle. For example, an auto-rickshaw which was purchased some two years ago was priced for Rs. 40,000/-. To-day the same vehicle is available for Rs.55,000/-. Hence, the replacement cost of the vehicle is Rs.55,000/- minus sale value of the existing vehicle.

A concept of replacement cost is very useful to the auto-rickshaw owner. The historical cost gives poor projections to the operator; but the replacement cost projects true picture, while ascertaining the profitability and the deciding the business planning.
Future Cost:

The trends of cost of vehicle show that the future cost of auto-rickshaw would be on increasing scale. Future cost estimates about the vehicle price are useful to auto-rickshaw operator for making arrangements for the replacement of the old vehicle. A normal rate of depreciation is not only sufficient for creating the vehicle-depreciation fund out of the profit. Besides this, some additional amount for meeting inflationary economic environment must be set aside from the profit so as to meet the future replacement cost of the vehicles. This replacement price has not only concern to historical value of the vehicle but also to the price rise likely to cause due to inflation and innovation in the vehicle model.

Cost Determinates in APT Business:

Like any other business, the APT needs factors of production i.e. land, labour, capital, entrepreneurship skill and the Government machinery. These factors of production are to be motivated by compensating their due claims. The following table shows in what ways such compensations are settled.
<table>
<thead>
<tr>
<th>Factor of production/ Inputs required</th>
<th>Cost or compensation paid for the use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Land or use of natural resource</td>
<td>This has no direct concern to vehicle operation. However, the rent paid to garage is nothing but the compensation paid to &quot;Land&quot; factor of production, Fuel cost is, too, the payment for natural resource used.</td>
</tr>
<tr>
<td>Labour</td>
<td>Salaries of the driver or payable to person driving the vehicle.</td>
</tr>
<tr>
<td>Capital</td>
<td>Interest (paid to lender or Bank on borrowed Capital), depreciation, insurance, etc.</td>
</tr>
<tr>
<td>Entrepreneurship skill</td>
<td>Profit and privileges enjoyed by the owner.</td>
</tr>
<tr>
<td>Government</td>
<td>Taxes, licence fees, income tax, etc. paid for getting protection, social security and use of socio-economic infrastructure.</td>
</tr>
</tbody>
</table>
Repairs and Maintenance expenses, insurance etc. are the expenses which are required either for maintaining the capital intact or safeguarding the same from the inherent business risks.

In nut-shell the operator or owner of the auto-rickshaw has to attract all the five factors of production i.e. land, labour, capital, entrepreneurship skill and Government machinery for carrying out his business venture and he has to incur specific costs for the same.

The above discussion may be understood in other way also. We know that various production factors which are used are also instrumental for the cost to be incurred for the auto-rickshaw operation. All these factors comprising or influencing cost may be spelt out to build the cost function.

The auto-rickshaw operation cost is a function of price of inputs, the rate of output, the size of plant and technology. Therefore, the APT business cost or auto-rickshaw operation cost function may be written as - APT Business Cost = F (I, O, P, T)

Where,
"I" = denotes the price of borrowed capital, driver, fuel, Government protection etc.

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"Q" = denotes the scale at which the auto-rickshaw is being operated in given time (say day, week, month or year).

"P" = denotes the seating capacity of vehicle i.e. size of plant.

"T" = denotes the state of technology i.e. petrol operated or diesel operated vehicle.

The above cost components help one to conceive cost behaviour in auto-rickshaw operation. The same explains the complex relationship of cost to numerous constituents. Each component of this complex relationship is a separate function by itself; and the sum of these separate functions pluralistically yields the complex function i.e. APT business.

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Cost of Auto-rickshaw Operation:

It consists of the fixed and variable costs. This cost of operation is ascertained for the ten new vehicles from Aurangabad for each of the following vehicle types:

(i) Diesel operated six seaters.
(ii) Diesel operated three seaters.
(iii) Petrol operated three seaters.
As explained in the first chapter, all the above types of auto-rickshaw comprising of ten owners of each type i.e. D0-6, D0-3 and P0-3 are kept under observation to work out the annual receipts, expenditure and operational details. On the basis of the information so collected, model cost for auto-rickshaw operation is worked out and their implications in actual realities are studied.

The model costs of various types of auto-rickshaw operations are worked out on account of the reasons mentioned below:

(i) Different types of auto-rickshaws of different makes and seating capacities have with different quantum of the costs. So also the vehicle is more than the new one. As a result operational cost considerably differs from vehicle to vehicle.

(ii) An investment in auto-rickshaw made by new entrant is about Rs.55,000/- in 1995, while those who came in APT business two years ago, spent about Rs.47,000/- and those who came decade ago, spent about Rs.15,000/- . Thus, for the old operator’s vehicle cost, after deducting depreciation from the profit would perhaps be zero. The price rise of the vehicle and its spare parts etc. creates such situation that
the investment size of the vehicle owners differs from period to period. It causes different scale of the economy for the different vehicles for the same scale of operation.

(iii) By and large the vehicle operators do not keep the record of receipts, expenses and operations in Kms. They, hence, are unable to furnish precise and correct cost data.

(iii) Operational practices i.e. shift operations, hiring out the vehicle for business, contractual terms etc. are different from operator to operator resulting different scale of the cost sheets.

(v) Operators borrow from the various sources for their vehicles on different rates of interest. As a result the borrowings costs are of varying scale from one operator to other.

(vi) Some operators incur all the operational expenses regularly while some may postpone the expenses for future settlement or sometimes they are kept un-incurred.

(vii) Traditions, culture and customs of the vehicle operators are varying and that may influence the APT Business costs.
In view of heterogeneities in APT business operations resulting on costs as stated above, it is thought appropriate to forge a "Model" for the cost of operation of the vehicle. The forthcoming pages are devoted to this.

There are as said already three types of auto-rickshaws included in our study. These are coded as below:

(i) Large size DIESEL Operated Six Seaters coded as DO-6.

(ii) Small size Diesel Operated Three Seaters coded as DO-3.

(iii) Small size Petrol Operated Three Seaters coded as PO-3.

The above codings are used in draft while analysing the cost/profitability of the respective size of vehicle operated either with diesel or petrol. It is to be noted that the vehicles which are newly purchased are only included in the cost analysis. The cost analysis refers to the period of 12 months or one year.

Purchase Cost and Bank Finance:

The purchase cost or price of DO-6 in June 1996 was Rs.121/- thousands and for DO-3 it was Rs.65/- thousands.
As compared to above, purchase cost of PO-3, Rajaj Model was Rs. 47/- thousands.

The bank facilitates 70 per cent purchase cost of vehicle by way of loan and rest of the balance is met by the operator from his own sources. Thus the Bank finance for DO-6 and DO-3 would be Rs.84.7 and Rs.45.5 thousands respectively, while for PO-3, it would be Rs.32.9 thousands (Table No. 3.2).

Fixed Costs:

The fixed costs of auto-rickshaw operation consists of -

   i) interest on borrowed capital
   ii) insurance, taxes and fees, etc.
   iii) rent paid to garage
   iv) depreciation
   v) salaries/wages paid to drivers.

The analysis of each of the above items of fixed cost is made in the subsequent pages:

(i) Interest paid on borrowings:

It is learnt from the field studies that the operator desiring to undertake APT business, borrows the funds from the friends, relatives, moneylenders, traders, and banks. However, each and every operator attempts to get loan from the bank for the vehicle,
since the interest on loan so procured is reasonable as compared to other private or non-institutional lenders. So also in the case of default, the banker normally does not take the possession of the vehicle but tries to find out the remedies for enabling the borrower to re-pay the loans.

The vehicle operator has to bring about 25 per cent portion of the vehicle price from his own sources and rest i.e. 75 per cent loan is given by the bank. With this condition, the extent of loans that could be facilitated by the bank would be Rs.99,750/- for DO-6, Rs.55,500/- for DO-3 and Rs.38,250/- for PO-3 auto-rickshaws; and the amount of interest at the rate of 18 per cent per annum payable on these loans by the end of first year would be Rs.17,955/-, Rs.9,990/- and Rs.6,885/- respectively (Table No.3.3).

The amount of interest payment can be postponed, if operator desires.

(ii) Insurance, Road Tax, Licence Fees and Other Miscellaneous:

The APT business operator incurs all these charges. The table No.3.4 explains the same. The annual amount of these charges during the first year of working would be Rs.4,250/- for DO-6, Rs.2,350/- for DO-3, or for PO-3 auto-rickshaws. All these
expenses can be postponed by the operator, if he desires.

(iii) Salaries of Driver:

Almost 70 to 75 per cent owners in APT business operate on their own at least for lone shift extending between 8 to 12 hours of the major period of the peak business hours in a day. For the rest of the period, the vehicle may be hired out. Whether an owner employs driver or not, it is assumed that an owner gets salary for his work even for driving his own vehicle. His opportunity cost for driving is normally Rs.1,000/- per month and Rs.12,000/- in the year (Table No.3.8), that he could earn if he works as a driver on other vehicle.

(iv) Rent Paid to Garage:

The Motor Vehicle Act, 1988 insists that the auto-rickshaw, when it is not on road for business should be kept in the garage. Though no operator or owner keeps his vehicle in the garage, it is assumed that he keeps the vehicle in the garage for which he pays garage rent which amounts Rs.1,200/- per annum for D0-6 and Rs.600/- for small size 3-seater auto-rickshaws (Table No.3.8).
This type of expenditure is never incurred by any operator. Without this, he visualizes the viability of APT business. Naturally, it produces encouraging picture, since the garage rent from the operational cost is omitted. However, in the cost structure, the same is included.

(v) Depreciation:

The amount of depreciation is not accurately envisaged by any operator. They have some rough estimates about it and some of them may attempt to put aside some portion of daily receipts by way of depreciation fund. With this fund and with the bank loan they may plan to replace the worn out vehicle.

There is a need to find out the quantum of depreciation on vehicle by using scientific method. It is reported by the experts and operators too that the vehicle on an average may efficiently be used in Aurangabad for the period of ten years. After passage of ten years, it could not be operated with the expected level of mechanical efficiency and hence it would be better to sale it and realize the scrap value. The net loss or depreciation (Table No.3.7) that would be incur can be apportioned over the entire working life of the vehicle, which is ten years.
The above can be explained in formula as:

\[
\text{Annual Rate of Depreciation on Vehicle} \times \frac{\text{The purchase price of vehicle} - \text{ten years}}{\text{Ten years as unusable period of the vehicle.}} = \text{Expected scrap value of vehicle after ten years.}
\]

With the above formula, the annual rate of depreciation so worked out is Rs.11,300/- for DO-6, Rs.6,400/- for DO-3 and Rs.4,300/- for PO-3 auto-rickshaw (Table No.3.8).

**Quantum of Total Fixed Costs:**

Table No.3.8 shows the total fixed cost of APT business carried through different types of auto-rickshaws. It is seen from the table that the total fixed cost for DO-6 was Rs.46,705/-, for DO-3 Rs.31,340/- and for PO-3 Rs. 26,135/- per annum.

Almost majority portion of these fixed costs could either be avoided or be postponed. While carrying APT business, the operator is anxious only about payment of taxes and insurance.

**Variable Costs of Vehicle Operations:**

As with the scale of operations, the variable costs increase. The APT business has with the following types of variable costs:

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(i) Cost of repairs and maintenance (R & M) including tyres, tubes, painting, cushioning, etc.

(ii) Cost of fuel, lubricant, and engine oil.

The explanation of these costs are as given ahead.

(i) Repairs and Maintenance Cost:

This type of expenditure is somewhat difficult to ascertain from the operators, since they do not keep any record of the same. In view of this, an intensive discussion with auto-rickshaw operators, mechanical engineers from the Bajaj Auto, and repair shop men was made and their views collected. The view of the ten selected operators of each type of vehicles (i.e. DO-6, DO-3 and PO-3) keeping in operation their vehicle for last five years are reconciled with the views of above experts and each selected operator after much dialogue is asked to extend his final opinion about the R & M cost for his vehicle. R & M expenditure so ascertained from the ten operators of each of the auto-rickshaw type, is used for ascertaining the annual R & M expenditure as shown in the Table No.3.10. This table shows that R & M cost for DO-6 was Rs.2,500/- for DO-3 Rs.1,400/- and for PO-3 it was Rs.900/- per annum.

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(ii) Cost of Fuel and Lubricant:

Table No. 3.11 shows the methods used for ascertaining this cost and the estimation of cost for 1996-97. The annual fuel and lubricant cost, as it is seen from the table that it is Rs.52,361 for DO-6, Rs.9,849 for DO-3 and Rs.27,632 for PO-3.

Total Quantum of Variable Cost:

The table No. 3.11 shows that this amounted to Rs.34,861/- for DO-6, Rs.11,249 for DO-3, and Rs.28,532/- for PO-3.

Aggregate Cost of Operation:

It is observed from the table NO.3.12 that the total cost of operation for DO-6 was Rs.81,566/-, for DO-3 Rs. 42,589 and for PO-3 it was Rs.54,487/-.

Receipts:

Annual receipts from the APT business under each type of auto-rickshaw are worked out on the basis of methodology given in the Chapter - I. According of this the annual receipt estimation of APT business is made by keeping in observation ten new vehicles of different types (i.e. DO-6, DO-3 and PO-3).

The gross earnings of DO-6 against per litre of Diesel used came to Rs.35.75 or per day it was Rs.411/- the total for the year, was Rs.1,23,300/-.  

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The similar earnings for DO-3 at the rate of Rs. 47.50 per litre of Diesel used or Rs. 166/- per day came to Rs. 49,000/- while for PO-3 at the rate of Rs. 55.25 per litre of petrol used or Rs. 188/- per day came to Rs. 56,400/-.

Briefly, the gross annual receipts for DO-6 amounted to Rs. 1,23,300/-, for DO-3 Rs. 47,800/- and for PO-3 to Rs. 56,400/- (Table No. 3.13).

Net Earnings or Net Profit:

After deducting APT business cost from its receipts, one gets net profit or net loss. The annual net profit for DO-6 amounted to Rs. 41,734/-, for DO-3 to Rs. 7,211/- and for PO-3 Rs. 1,913/- per annum (Table No. 3.14).

Scale of Operation:

The scale of operation for the vehicles of different types is worked out on the basis of observation of 10 selected auto-rickshaw of each type of vehicle. It is found that DO-6 covers 18.40 Kms. against per litre of fuel, DO-3 and PO-3 cover 22.50 and 23.40 Kms. per litre. The resultant daily average operation for DO-6 was 212 Kms., for DO-3 - 79 Kms., and PO-3 80 Kms. with annual operation of 63,600; 23,700 and 24,000 Kms. (Table No. 3.15).
Per kilometre variable cost amounted to Rs.0.53 for DO-6 and Rs.0.48 for DO-3 while for PO-3 it was Rs.1.18 per Km.

The incidence of fuel cost was larger for PO-3 i.e. 1.15 per Km. as against the smaller for DO-6 i.e. Rs.0.51 per Km. or for DO-3 i.e. Rs.0.42 per km. (Table No.3.17).

Thus, petrol operated auto-rickshaw is put into disadvantageous position due to its higher level cost of fuel while diesel operated auto-rickshaws enjoy advantageous position in fuel cost economy.

Thus, DO-6 has larger scale of operation than DO-3 or PO-3.

Operational Cost/Profit Incidence:

Per kilometre operational cost, receipts and profit of each type of auto-rickshaw are known from the table No.3.16. This table shows that operational cost, receipts and profits per kilometre for DO-6 were Rs.1.94, Rs. 1.28 and Rs.0.66 respectively; the similar incidences for DO-3 were respectively Rs.2.10, Rs.1.80 and Rs.0.30.

As against the above, the PO-3 had only 0.08 per km. operational profit, after deducting Rs.2.27
per Km. operational cost from Rs.2.35 per kilometre operational receipts.

Per kilometre costs of the various components of the fixed cost of the auto-rickshaw operation is known from the table No.3.18. This table shows that the per km. aggregate fixed cost of operation for PO-3 was Rs.1.09; while for DO-6 and DO-3 the same were respectively Rs.0.73 and Rs.1.32.

The incidences of fixed cost per km. were higher in the respect of PO-3 and DO-3 than what were for DO-6.

Table No.3.19 provides the comparative account of the fixed and the variable cost incidences per Km. for the different types of auto-rickshaws.

Table shows that the DO-6 auto-rickshaw is better placed in the respect of per km. fixed and variable cost, while DO-3, as against PO-3 is better placed. In other words, the petrol operated auto-rickshaw has more costlier operation than the diesel operated auto-rickshaws.

Capacity Utilization:

All the auto-rickshaws of different types operated in the city are not being used fully due to lack of transportation demand from the people. As a
result, DO-6 was used 88 per cent, DO-3 used for 33 per cent and PO-3 used for 32 per cent of their respective available installed capacity. This under utilization is due to fact of lower scale of demand for travel in Aurangabad.

Supply Cost of Services by APT Business:

After understanding the sales/cost/profitability of APT business under specific assumptions, it is possible to relate the same with actual realities.

ROI and Investment:

ROI i.e. Return on Investment is considered to be one of the reasons motivating the investor to decide the range of the venture in any given business and APT business is not exception to this. With the model loss (-) or profit (+), that can be worked out for the APT business, as follows:

<table>
<thead>
<tr>
<th>Vehicle Type</th>
<th>Investment in vehicle</th>
<th>Profit (+)</th>
<th>Loss (-)</th>
<th>ROI % of Col.3 as to Col.2</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO-6</td>
<td>1,33,000</td>
<td>(+) 41,734</td>
<td>31.38%</td>
<td></td>
</tr>
<tr>
<td>DO-3</td>
<td>74,000</td>
<td>(+) 7,211</td>
<td>9.74%</td>
<td></td>
</tr>
<tr>
<td>PO-3</td>
<td>51,000</td>
<td>(+) 1,913</td>
<td>3.75%</td>
<td></td>
</tr>
</tbody>
</table>

Source: Table No. 3.2 and 3.14.
Thus, the ROI was as low as 3.75 per cent for PO-3, as high as 3.138% for DO-6 and reasonable i.e. 9.74% for DO-3 auto-rickshaw. The ROI level so estimated above may be maximized by the operators by using old vehicle needing small investment, and by avoiding or postponing the fixed costs of operations. In what ways the net earnings and ROI could be maximized in actual practice are discussed ahead:

(i) Avoiding to pay Interest or Reducing Scale of Interest Payable:

The interest payment as estimated is only for those who obtain loan from the bank for their vehicles. This heavy interest payment could be avoided by owner operator by practicing one or two methods mentioned below:

(a) Operating old auto-rickshaw in business by purchasing it at lower price;

(b) Operating old vehicle procured sometimes in the past on loan, but the loan amount on it is duly paid;

(c) Utilizing the own savings for vehicle purchase;

(d) Postponing the payment of interest which is due;
(e) Borrowing small amount for vehicle purchase.

This naturally reduces the borrowings cost and elevates the scale of profit and ROI.

(ii) Reduction in Depreciation:

The estimated rate of depreciation is of large size on the new vehicle, while for the old vehicle it may be less or even it may be zero. Many operators do not take into consideration the depreciation charge against profit. They may set aside gradually a small funds from the profit, so that in future they could purchase the new vehicle with the bank loan requiring initial borrower’s contribution which may be equivalent to the above set aside amount.

When the depreciation of the vehicle is filtered or treated in the above way, the profit size found to be swelled and ROI too!

(iii) Avoiding Rent of Garage:

No operator takes the same in account, though the same as per law (Motor Vehicle Act) is considered while ascertaining the viability of APT business. As a result of omission of the "Rent", the profit size increases alongside with the ROI.
(iv) Avoiding to pay Insurance and Taxes:

The payment of Insurance and Income Tax is avoided by the operator skillfully. Only the payment of road tax is made. This naturally increases the profit size in an illegal way. This is a one type of un-authorised incentive to vehicle owner.

In nut-shell, the major portion of the fixed cost is either avoided or postponed or there is no need to incur. As regards to the variable cost repairs excepting mechanical can be avoided but fuel expenses in no case are avoidable. However, the same are minimized by using kerosene instead of petrol or diesel.

On the whole, it is seen that, though the supply cost of APT services through the 6 seater diesel operated auto-rickshaw is Rs.1.28 per km., through small size 3 seater diesel operated auto-rickshaw it was Rs.1.80 per kg. and through the 3 seater petrol operated auto-rickshaw was Rs.2.27 per km., the same could be minimized or brought down to minimum level for securing higher profit or ROI.

The following exercise will clear this:
<table>
<thead>
<tr>
<th>Sr. No.</th>
<th>Cost components</th>
<th>Per kilometre cost for DO-6 (in paisa)</th>
<th>DO-3 (in paisa)</th>
<th>PO-3 (in paisa)</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Interest on borrowings</td>
<td>28</td>
<td>42</td>
<td>28</td>
<td>Fully avoided</td>
</tr>
<tr>
<td>2</td>
<td>Garage Rent</td>
<td>02</td>
<td>03</td>
<td>03</td>
<td>-do-</td>
</tr>
<tr>
<td>3</td>
<td>Depreciation</td>
<td>18</td>
<td>27</td>
<td>18</td>
<td>-do-</td>
</tr>
<tr>
<td>4</td>
<td>Driver's salary</td>
<td>19</td>
<td>50</td>
<td>50</td>
<td>-do-</td>
</tr>
<tr>
<td>5</td>
<td>Insurance, Road Tax, etc.</td>
<td>06</td>
<td>10</td>
<td>10</td>
<td>Can be postponed</td>
</tr>
<tr>
<td>6</td>
<td>Repairs and Maintenance</td>
<td>04</td>
<td>06</td>
<td>03</td>
<td>Unavoidable</td>
</tr>
<tr>
<td>7</td>
<td>Fuel cost*</td>
<td>51</td>
<td>42</td>
<td>115</td>
<td>Unavoidable but may be minimized by using Kerosene</td>
</tr>
</tbody>
</table>

A) Total cost (1 to 7)
- 128
- 180
- 227

B) Fully avoidable Cost
- 67
- 122
- 99

C) % of (B) as to (A)
- 52%
- 68%
- 44%

Source: Table NO. 3.18.

The above table shows that the profit per kilometre can be increased for DO-6 by 67 paisa, for DO-3 for 122 paisa and for PO-3 by 99 paisa. The resultant full cost escape would be 52% for DO-6, 68% for DO-3 and 44% for PO-3.
With the foregoing logic the per kilometre supply cost of different types of auto-rickshaws may vary in between two extremes as stated below:

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Per Kilometre</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Model Cost</td>
<td>Cost that can be fully avoided</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>DD-6</td>
<td>128</td>
<td>67</td>
</tr>
<tr>
<td>DD-3</td>
<td>180</td>
<td>122</td>
</tr>
<tr>
<td>PO-3</td>
<td>227</td>
<td>99</td>
</tr>
</tbody>
</table>

Source: Previous table.

Within the extremes of cost parameters, as stated above, the concern auto-rickshaw operator tries to manage his business.

**Inflation Effect on Cost:**

By inflation, in ordinary language we mean a process of rising prices. At present we face inflation because of two circumstances i.e. Demand Pull Inflation and Cost Push Inflation. The former is outcome of increase population anticipating more and more higher level of consumption goods and services as...
against the small supply. While latter is outcome of rise in the cost of input on account of scarcities. Both the circumstances have given rise to the prices.

The movement of price rise during 1982 to 1993 is observed from the table No.3.1. The table shows that the among major groups the maximum increase has occurred in the fuel group (135 per cent) followed by primary articles (134 per cent). The prices on the whole increased by 131 per cent during this period.

The increase scale inflation is also a cause to rise the cost of operation of auto-rickshaw. All the input of this business have been experiencing rising price situation. An analysis of cost profitability of this business cannot be visualize without knowing the implication of the inflation.

---III---

Cost of Auto-Rickshaw Operations in Poona:

Like Aurangabad, the Poona city is selected for investigating the cost-profitability-volume of APT Business. The logic and research methodology used for the purpose are similar to that is used for study of APT business in Aurangabad.
utility of vehicle (Table No. 3.25) is worked out to Rs.12,800 for DO-3 and Rs.8,600 for PO-3 (Table No. 3.26). Thus, depreciation rate for former vehicle was more than latter and also they were still more than that observed in Aurangabad (Table No. 3.27).

v) The amount of annual salaries that would be required to pay comes to Rs.12,000/- for each vehicle type (Table No. 3.27).

vi) All the elements of fixed cost i.e. interest, insurance/taxes, etc., rent for garage, depreciation and salaries or wages, when added together reveal the total fixed cost of APT business. The annual incidence of such total fixed cost for DO-3 came to Rs.37,749 and for PO-3, it came to Rs. 30,435 (Table No. 3.27).

Per kilometer annual fixed cost for DO-3 was Rs. 65 paise and for PO-3 it was 49 paise (Table No.3.37).

The annual variable costs of auto-rickshaw operators in Poona are as follows :-

i) Annual average fuel cost for DO-3 was Rs.23,638 and for PO-3 it was Rs.69,080 (Table No.3.28).
ii) Annual average repairs and maintenance expenses for DO-3 and PO-3 were respectively to Rs.3,100 and Rs. 2,100 (Table No.3.29).

iii) When added above (i) & (ii), we get total variable cost which was Rs. 26,738 for DO-3 and Rs.71,180 for PO-3 (Table No.3.30).

Per kilometre annual variable cost for DO-3 was 46 paise and for PO-3 it was 113 paise (Table No.3.36).

The total annual cost consisting of fixed and variable costs for operating DO-3 came to Rs. 64,478 and PO-3 to Rs.1,01,615 (Table No.3.31).

Per kilometre total cost for DO-3 was 111 paise and for PO-3 it was 162 paise (Table No.3.38).

Receipts:

DO-3 fetched yearly gross income amounting to Rs.1,31,700/- while PO-3 fetched Rs. 1,56,900/- (Table No.3.32).

Gross earnings against per litre of diesel consumption was worked out to be Rs.52.25 for DO-3, Rs.61.50 for PO-3. Per day earnings of DO-3 came to Rs.439, while for PO-3 to Rs.523.
ii) An annual net earnings i.e. gross earnings - total cost of APT business was Rs. 67,222 for DO-3 and Rs. 55,285 for PO-3 (Table No. 3.33).

Scale of Operation:

i) DO-3 in Poona is annually operated to the extent of 58,500 kms, while PO-3 to the extent of 63,000 kms (Table No. 3.34).

ii) Per km. gross earnings, cost and profit for DO-3 were respectively Rs. 2.25, Rs. 1.10 and Rs. (+) 1.15 while for PO-3 they were respectively Rs. 2.49, Rs. 1.61 and (+) Rs. 0.88 (Table No. 3.35).

Capacity Utilization:

Out of the total available vehicle capacity of DO-3 in the year, only 54% was used, while similar percentage for PO-3 was 58 (Table No. 3.39).

APT Business in Poona vis-a-vis Aurangabad:

i) Capital investment structure for APT Business both in Poona and Aurangabad is similar (Table No. 3.40).

ii) Annual fixed cost of operation for DO-3 in Poona was Rs. 37,740, while in Aurangabad it was com-
paratively smaller amounting Rs.31,340/-. The similar fixed cost for PO-3 in Poona amounted to Rs.30,435 as against Rs.26,135 in Aurangabad.

The fixed cost of operation for auto-rickshaws in Aurangabad is smaller than Poona because an annual incidence of depreciation, an one of the components of fixed cost is smaller than in Poona where the vehicle has 5 years of working life as against 10 years to Aurangabad auto-rickshaws.

iii) Amount of annual variable costs for PO-3 were Rs.71,180 in Aurangabad and Rs.28,135 in Poona; and similar cost for DO-3 amounted to Rs.26,738 in Poona and Rs.11,249 in Aurangabad. This difference was due to the small size of APT business operations in Aurangabad as against what was observed in Poona (Table No.3.41).

The table No.3.42 informs about a comparative scale of profitability of APT business in Poona and Aurangabad. It is seen that annual ROI is 90.8% for DO-3 and 108.40% for PO-3 in Poona, while the similar is 9.74% and 3.75% respectively for DO-3 and PO-3 in Poona. It shows poor state of APT business in Aurangabad in comparison with Poona.
Capacity Utilization:

Poona APT business though enjoys prosperity as revealed by ROI, is obstructed by under used capacities of vehicle. Thus only 53% D0-3 and 58% of P0-3 installed capacities of vehicles were used in APT business; far of the similar percentages was 22% for both the vehicle types.

It is expected that the vehicle should be used for 18 hours a day by covering 360 kilometres of operation. However, the APT business was not as brisk as to exhaust all such installed capacities. This is due to many reasons, discussed in earlier pages.
Table No. 3.1: Extent of Price Rise and Share in Inflation 1982-83 to 1992-93 (Upto December 1992).

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Weight</th>
<th>Extent of price rise</th>
<th>Share in Inflation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>ALL COMMODITIES</th>
<th>100.00</th>
<th>131.0</th>
<th>100.0</th>
</tr>
</thead>
<tbody>
<tr>
<td>I. Primary articles</td>
<td>32.30</td>
<td>133.8</td>
<td>33.0</td>
</tr>
<tr>
<td>A Food articles</td>
<td>17.39</td>
<td>172.4</td>
<td>22.9</td>
</tr>
<tr>
<td>Food grains</td>
<td>07.92</td>
<td>138.3</td>
<td>8.4</td>
</tr>
<tr>
<td>Cereals</td>
<td>06.82</td>
<td>136.8</td>
<td>7.2</td>
</tr>
<tr>
<td>Pulses</td>
<td>01.09</td>
<td>148.0</td>
<td>01.2</td>
</tr>
<tr>
<td>Fruits and Vegetables</td>
<td>04.09</td>
<td>172.0</td>
<td>05.3</td>
</tr>
<tr>
<td>Milk</td>
<td>01.96</td>
<td>176.0</td>
<td>02.6</td>
</tr>
<tr>
<td>Eggs,fish and meat</td>
<td>01.78</td>
<td>181.1</td>
<td>02.5</td>
</tr>
<tr>
<td>Condiments and spices</td>
<td>0.95</td>
<td>424.8</td>
<td>03.1</td>
</tr>
<tr>
<td>Other food articles (tea and coffee)</td>
<td>0.69</td>
<td>187.7</td>
<td>01.0</td>
</tr>
<tr>
<td>B Non-food articles</td>
<td>16.08</td>
<td>123.4</td>
<td>09.5</td>
</tr>
<tr>
<td>(fibres, oilseeds etc.)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C Minerals</td>
<td>04.83</td>
<td>16.4</td>
<td>0.6</td>
</tr>
<tr>
<td>Irons ore</td>
<td>0.15</td>
<td>82.2</td>
<td>0.1</td>
</tr>
<tr>
<td>Imported crude petroleum</td>
<td>03.90</td>
<td>58.7</td>
<td>1.2</td>
</tr>
<tr>
<td>Indigenous crude petroleum</td>
<td>01.27</td>
<td>130.9</td>
<td>1.3</td>
</tr>
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Contd. on Next Page...
Table No. 3.1 Contd....

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<th>2</th>
<th>3</th>
<th>4</th>
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<tbody>
<tr>
<td></td>
<td>10.66</td>
<td>134.9</td>
<td>11.9</td>
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<tr>
<td>II. Fuel and Light</td>
<td>81.26</td>
<td>196.5</td>
<td>01.9</td>
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<td>Coal Mining</td>
<td>06.67</td>
<td>119.3</td>
<td>06.1</td>
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<tr>
<td>Minerals oils</td>
<td>02.74</td>
<td>144.8</td>
<td>03.0</td>
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<tr>
<td>Electricity</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>III. Manufactures</td>
<td>57.04</td>
<td>128.6</td>
<td>56.0</td>
</tr>
<tr>
<td>A</td>
<td>Food products</td>
<td>10.14</td>
<td>125.9</td>
</tr>
<tr>
<td></td>
<td>Sugar</td>
<td>02.01</td>
<td>74.3</td>
</tr>
<tr>
<td></td>
<td>Edible oils</td>
<td>02.45</td>
<td>163.9</td>
</tr>
<tr>
<td>B</td>
<td>Beverages etc.</td>
<td>02.15</td>
<td>195.7</td>
</tr>
<tr>
<td>C</td>
<td>Textiles</td>
<td>11.35</td>
<td>101.8</td>
</tr>
<tr>
<td>D</td>
<td>Wood &amp; Wood products</td>
<td>01.20</td>
<td>245.6</td>
</tr>
<tr>
<td>E</td>
<td>Paper &amp; paper Products</td>
<td>01.99</td>
<td>215.8</td>
</tr>
<tr>
<td>F</td>
<td>Leather &amp; Leather products</td>
<td>01.02</td>
<td>127.5</td>
</tr>
<tr>
<td>G</td>
<td>Rubber &amp; plastic products</td>
<td>01.59</td>
<td>87.7</td>
</tr>
<tr>
<td>H</td>
<td>Chemical &amp; chemical products</td>
<td>07.36</td>
<td>99.0</td>
</tr>
<tr>
<td>I</td>
<td>Non-metallic mineral products</td>
<td>02.48</td>
<td>130.0</td>
</tr>
<tr>
<td>J</td>
<td>Basic metals, alloys &amp; metal products</td>
<td>07.63</td>
<td>159.1</td>
</tr>
<tr>
<td>K</td>
<td>Machinery &amp; Machine tools</td>
<td>06.27</td>
<td>134.5</td>
</tr>
<tr>
<td></td>
<td>Electricity</td>
<td>02.99</td>
<td>121.1</td>
</tr>
<tr>
<td></td>
<td>Machinery</td>
<td></td>
<td></td>
</tr>
<tr>
<td>L</td>
<td>Transport equip. &amp; parts</td>
<td>02.71</td>
<td>121.0</td>
</tr>
<tr>
<td>M</td>
<td>Other misc. mfg. industries</td>
<td>00.97</td>
<td>39.1</td>
</tr>
</tbody>
</table>

Table No. 3.2: Purchase Price of New Auto-rickshaw in Aurangabad with all accessories (1996).

<table>
<thead>
<tr>
<th>Types of auto-rickshaw</th>
<th>Seating Capacity</th>
<th>Purchase cost</th>
<th>Amount of Bank loan (75 percent of the purchase cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**A) Diesel Operated:**

1) Large size
   - Six
   - 1,33,000
   - 99,750/-

2) Small size
   - Three
   - 74,000
   - 55,500/-

**B) Petrol Operated:**

1) Three seaters
   - Three
   - 51,000
   - 38,250/-

Source: Field Survey
Table NO. 3.3 : Amount of interest payable to Bank during First Year of purchase of Auto-rickshaw (1995-96) in Aurangabad.

(in Rupees)

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount of loan could be sought from Bank</th>
<th>Amount of interest payable at the rate of 18% p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   - Six seaters
     - DD-6
     - 99,750/-
     - 17,955/-

2) Small size
   - Three seaters
     - DD-3
     - 55,800/-
     - 9,990/-

B) Petrol Operated:

1) Small size
   - Three seaters
     - PO-3
     - 38,250/-
     - 6,885/-

Source : Field Survey.
Table NO. 3.4: Insurance, Road Taxes, Licence fees Inspection fees and other miscellaneous charges/out of pocket expenses to be incurred by the auto-rickshaw owner in Aurangabad (1996).

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2 silence</td>
</tr>
</tbody>
</table>

(in Rupees)

A) Diesel Operated:

1) Large size
   - Six seaters
   - DO-6
   - Amount: 4,250/-
   - Comprehensive Insurance of Rs.2173/-
   + Rs.590 Road Tax +
   + Other Taxes/Fees etc.

2) Small size
   - Three seaters
   - DO-3
   - Amount: 2,350/-
   - Comprehensive Insurance of Rs.1014/-
   + Rs.280/- Road Tax,
   + Other taxes/Fees, etc.

B) Petrol Operated:

1) Small size
   - Three seaters
   - PD-3
   - Amount: 2,350/-
   - Comprehensive Insurance of Rs.1014/-
   + Rs.280/- Road Tax +
   + Other Taxes/fees, etc.

Source: Field Survey.
Table NO. 3.5 : Amount of Rent that might be paid in the case of the Garage hired for auto-rickshaw (1996) in Aurangabad. (in Rupees)

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount of Rent p.a.</th>
<th>Percentage of rent to its purchase cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DO-6
   1,200/- One

2) Small size
   Three seaters
   DO-3
   600/- One

B) Petrol Operated:

1) Small size
   Three seaters
   PO-3
   600/- One

Source : Field Survey.
Table No. 3.6: Average scrap value of Auto-rickshaw in Aurangabad after ten years duration of use.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Amount of Purchase Price</th>
<th>Scrap value could be expected</th>
<th>Percentage of Col.(3) as to Col(2).</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>A) Diesel Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Large size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Six seaters DD-6</td>
<td>1,33,000/-</td>
<td>20,000/-</td>
<td>1,13,000/-</td>
</tr>
<tr>
<td>2) Small size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seaters DD-3</td>
<td>74,000/-</td>
<td>10,000/-</td>
<td>64,000/-</td>
</tr>
<tr>
<td>B) Petrol Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Small size</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seaters PD-3</td>
<td>51,000/-</td>
<td>8,000/-</td>
<td>43,000/-</td>
</tr>
</tbody>
</table>

Source: Field Survey
Table No. 3.7: Amount of depreciation per annum to be incurred by each type of Auto-rickshaw in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Purchase cost</th>
<th>Scrap value</th>
<th>Net capital depreciation for 10 yrs. per year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Col.2(-)</td>
<td>Col.3</td>
<td>Col.4</td>
</tr>
</tbody>
</table>

1  2  3  4  5

A) Diesel Operated:

1) Large size
   - Six seaters
     - 1,33,000
     - 29,000
     - 1,13,000
     - 11,300

2) Small size
   - Three seaters
     - 74,000
     - 10,000
     - 64,000
     - 6,400

B) Petrol Operated:

1) Small size
   - Three seaters
     - 51,000
     - 8,000
     - 43,000
     - 4,300

Source: Field Survey
Table No. 3.8: Fixed cost of Auto-rickshaw Operations (1996) in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Interest on Borrowed capital</th>
<th>Insurance taxes, etc.</th>
<th>Rent for Garage</th>
<th>Depreciation</th>
<th>Salaries</th>
<th>Total at the rate of Rs.1000/- per month</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   D0-6
   17,955 4,250 1,200 11,300 12,000 46,705

2) Small size
   Three seaters
   D0-3
   9,990 2,350 600 6,400 12,000 31,340

B) Petrol Operated:

1) Small size
   Three seaters
   P0-3
   6,085 2,350 600 4,300 12,000 26,135

Source: Field Survey
Table NO. 3.9: Average cost of fuel inclusive of engine oil, lubricating oil etc. in Aurangabad in the year 1996.

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Average cost for 1994</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DD-6
   32,361/-
   Enquiries about the fuel expenses for the month of Sept. 1996 are made and annual fuel cost is estimated.

2) Small size
   Three seaters
   DD-3
   9,849/-

B) Petrol Operated:

1) Small size
   Three seaters
   PD-3
   27,632/-
   --- do ---

Source: Table NO. 3.11.
Table NO. 3.10: Average R & M expenses of Auto-rickshaw operation in the year (1996) in Aurangabad.

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Average R &amp; M Expenses</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(in Rupees)</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DD-6
   2,500/- Inclusive of expenditure on tyres and tubes

2) Small size
   Three seaters
   DD-3
   600/- Inclusive of expenditure on tyres and tubes

B) Petrol Operated:

1) Small size
   Three seaters
   P0-3
   900/- Inclusive of expenditure on tyres & tubes.

Source: Field Survey.
Table NO. 3.11: Estimation of amount of variable cost of auto-rickshaw operation incurred by owner in the year (1996-97) in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Fuel cost</th>
<th>R &amp; M Expenses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DD-6
   32,361/-  2,500/-  34,861/-

2) Small size
   Three seaters
   DD-3
   9,849/-  1,400/-  11,249/-

B) Petrol Operated:

1) Small size
   Three seaters
   PD-3
   27,632/-  900/-  28,532/-

---

Fuel Cost:

1. A diesel operated auto-rickshaw of six seaters needs 11.5 litre of diesel per day and for the year (300 days) it is estimated comes to 3,450 litres costing Rs.32,361/-.  
2. Diesel operated auto-rickshaw of three seaters needs 3.5 litres of diesel per day and for the year (300 days) it is estimated to 1,050 litres costing Rs.9,849/-  
3. Petrol operated auto-rickshaw of three seater needs 3.4 litres of petrol per day and for the year (300 days) it is estimated to 1,20 litres costing Rs.27,632/-

Average fuel cost per day is worked out on the basis of data provided by Ten New Auto-rickshaw (of less than two years in service) for the month of September 1996 vide instruction sheet attached to Questionnaire. Petrol cost (on 25th July, 1996) is Rs.27.09 and Diesel cost is Rs.9.38 per litre.
Table NO. 3.12: Amount of total cost of auto-rickshaw operation in the year (1996) in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Fixed cost</th>
<th>Variable cost</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DD-6
   46,705/-  34,861/-  81,566/-

2) Small size
   Three seaters
   DD-3
   31,340/-  11,249/-  42,589/-

B) Petrol Operated:

1) Small size
   Three seaters
   PD-3
   26,135/-  28,352/-  54,487/-

Source: Table No. 3.8 and 3.11.
<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Gross earnings Per Ltr.</th>
<th>In year for 300 days (1996)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**A) Diesel Operated:**

1) Large size
   Six seaters
   DO-6
   
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>35.75</td>
<td>411/-</td>
<td>1,23,300/-</td>
</tr>
</tbody>
</table>

2) Small size
   Three seaters
   DO-3
   
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>47.50</td>
<td>165/-</td>
<td>49,800/-</td>
</tr>
</tbody>
</table>

**B) Petrol Operated:**

1) Small size
   Three seaters
   PD-3
   
<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>55.25</td>
<td>188/-</td>
<td>56,400/-</td>
</tr>
</tbody>
</table>

Source: Field Survey
Table NO. 3.14: Net earnings from each type of auto-rickshaw in APT business (in Rs.) (1993-94) in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Gross Earnings</th>
<th>Total Cost</th>
<th>Net Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

(in Rupees)

A) Diesel Operated:

1) Large size
   Six seaters DO-6
   1,23,300/- 81,566/- (+) 41,734/-

2) Small size
   Three seaters DO-3
   49,800/- 42,589/- (+) 7,211/-

B) Petrol Operated:

1) Small size
   Three seaters PD-3
   56,400/- 54,487/- (+) 1,913/-

Source: Field Survey
Table NO. 3.15: Scale of annual operation of each types of Auto-rickshaw in APT Business in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per litre Kms. operated</th>
<th>Per day Kms. operated</th>
<th>Kms. operated in the year</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**A) Diesel Operated:**

1) Large size
   Six seaters DO-6
   18.40
   212/-
   63,600/-

2) Small size
   Three seaters DO-3
   22.50
   79/-
   23,700/-

**B) Petrol Operated:**

1) Small size
   Three seaters PO-3
   23.40
   80/-
   24,000/-

Source: Field Survey
Table No. 3.16: Estimation of cost and profit of different types of auto-rickshaw for 1996-97 in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Kms. operated</th>
<th>Gross earnings in year</th>
<th>Total cost in year</th>
<th>Per kilometre operational</th>
<th>Gross earnings</th>
<th>Cost</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>A) Diesel Operated:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Large size Six seater DD-5</td>
<td>63,600</td>
<td>1,23,300</td>
<td>81,566</td>
<td>1.94</td>
<td>1.28</td>
<td>(+) 0.66</td>
<td></td>
</tr>
<tr>
<td>2) Small size Three seater DD-3</td>
<td>23,700</td>
<td>49,800</td>
<td>42,589</td>
<td>2.10</td>
<td>1.00</td>
<td>(+) 0.30</td>
<td></td>
</tr>
<tr>
<td><strong>B) Petrol Operated:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Small size Three seater PD-3</td>
<td>24,000</td>
<td>56,400</td>
<td>54,487</td>
<td>2.35</td>
<td>2.27</td>
<td>(+) 0.08</td>
<td></td>
</tr>
</tbody>
</table>

Source: Table No. 3.12, 3.13 and 3.15.
Table No. 3.17: Estimation of per kilometre variable cost for different types of Auto-rickshaw for the year 1996-97 in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Total Variable Cost</th>
<th>Per kilometre variable cost for</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Fuel</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size<br> Six seaters<br> DO-6
   - 34,861/-
   - 0.51
   - 0.04
   - 0.55

2) Small size<br> Three seaters<br> DO-3
   - 11,249/-
   - 0.42
   - 0.6
   - 0.48

B) Petrol Operated:

1) Small size<br> Three seaters<br> PO-3
   - 28,352/-
   - 1.15
   - 0.30
   - 1.18

Source: Table No. 3.11 and 3.15.
Table No. 3.18: Per kilometre fixed cost of different types of Auto-rickshaw in Aurangabad.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Total fixed cost (in Rs.)</th>
<th>Per kilometre fixed cost for</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interest, Insurance, Rent for</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>taxes, etc., Garage</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>borrowed capital</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>A) Diesel Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Large size Six seaters DD-6</td>
<td>46,705</td>
<td>0.29</td>
<td>0.06</td>
</tr>
<tr>
<td>2) Small size Three seaters DD-3</td>
<td>31,340</td>
<td>0.42</td>
<td>0.10</td>
</tr>
<tr>
<td>B) Petrol Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1) Small size Three seaters PD-3</td>
<td>26,135</td>
<td>0.28</td>
<td>0.10</td>
</tr>
</tbody>
</table>

Source: Field Survey.
Table NO. 3.19: Per kilometre fixed, variables and total cost of different types of auto-rickshaw vehicle.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per Km.</th>
<th>Per Km.</th>
<th>Per Km.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Fixed cost</td>
<td>Variable cost</td>
<td>Total cost</td>
</tr>
<tr>
<td>(in Rupees)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

1) Large size
   Six seaters
   DD-6
   0.55  0.73  1.28

2) Small size
   Three seaters
   DD-3
   0.48  1.32  1.80

B) Petrol Operated:

1) Small size
   Three seaters
   PO-3
   1.18  1.09  2.27

Source: Field Survey
Table NO. 3.20: Capacity utilization of each type of auto-rickshaw.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per day capacity (1)</th>
<th>Per day capacity available for utilization (2)</th>
<th>Intensity of utilization (3)-(2) x 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>in passenger Kms.</td>
<td>in passenger Kms.</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:
1) Large size
   Six seaters
   DO-6
   2,160
   1,272
   59

2) Small size
   Three seaters
   DO-3
   1,080
   237
   22

B) Petrol Operated:
1) Small size
   Three seaters
   PO-3
   1,080
   240
   22

1. As opinion by the operators that they could operate vehicle daily, if the demand is in full swing.

2. Passenger Kms. = Seating capacity x Per day Kms.

Note:
Per day available vehicle capacity is estimated under the assumption that the vehicle should run for 18 hours in the Aurangabad city at the speed of 20 k.ms. per hour. It means that total kms. that could be covered in the day by the vehicle would be 360. In other words, auto-rickshaw should cover at least 360 kilometers per day in Aurangabad, so as to exhaust fully its installed capacity. The installed capacity of the vehicle is measured in terms of passenger kms. (kilometers covered x seats in the vehicle = passenger kms.). With this notion, the installed capacity for DO-6 is 2160, for DO-3 is 1080 and for PO-3 is also 1080 passengers kilometers per day, since DO-6 has six seats and DO-3/PO-3 has 3 seats.

Source: Field Survey.
Table No. 3.21: Purchase Price of New Auto-rickshaw in Poona with all accessories (1996).

<table>
<thead>
<tr>
<th>Types of auto-rickshaw</th>
<th>Seating Capacity</th>
<th>Purchase cost</th>
<th>Amount of Bank loan (75 percent of purchase cost)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

- Small size
- Three
- 74,000
- 55,500/-

B) Petrol Operated:

- Three seaters
- Three
- 51,000
- 38,250/-

Source: Field Survey

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount of loan could be sought from Bank</th>
<th>Amount of interest payable at the rate of 18% p.a.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

- Small size Three seater DO-3
  - Amount: 55,500/-
  - Interest: 9,990/-

B) Petrol Operated:

- Small size Three seater PO-3
  - Amount: 38,250/-
  - Interest: 6,885/-

Source: Field Survey.
Table NO.3.23: Insurance, Road Taxes, Licence fees Inspection fees and other miscellaneous charges/out of pocket expenses to be incurred by the auto-rickshaw owner in Poona (1996).

(in Rupees)

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters 2,350/-
DO-3

Insurance of Rs.1014/-
+ Rs.280/- Road Tax,
+ Other taxes/Fees, etc.

B) Petrol Operated:

Three seaters 2,350/-
PO-3

Comprehensive Insurance of Rs.1014/-
+ Rs.280/- Road Tax +
Other Taxes/fees, etc.

Source: Field Survey.
Table No. 3.24: Amount of Rent that might be paid in the case of the Garage hired for auto-rickshaw (1996) in Poona.

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Amount of Rent p.a. (in Rupees)</th>
<th>Percentage of rent to its purchase cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

**A) Diesel Operated:**

<table>
<thead>
<tr>
<th>Type of AUTO- Rickshaw</th>
<th>Amount of Rent p.a.</th>
<th>Percentage of rent to its purchase cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three seaters 600/-</td>
<td>One</td>
<td></td>
</tr>
<tr>
<td>D0-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**B) Petrol Operated:**

<table>
<thead>
<tr>
<th>Type of AUTO- Rickshaw</th>
<th>Amount of Rent p.a.</th>
<th>Percentage of rent to its purchase cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three seaters 600/-</td>
<td>One</td>
<td></td>
</tr>
<tr>
<td>D0-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey.
Table No.3.25: Average scrap value of Auto-rickshaw in Poona after five years duration of use.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Amount of Purchase Price</th>
<th>Scrap value could be expected</th>
<th>Percentage of Col. (3) as to Col(2),</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seater D0-3       74,000/-       16,000/-          64,000/-

B) Petrol Operated:

Three seater P0-3       51,000/-       8,000/-           43,000/-

Source: Field Survey
Table No. 3.26: Amount of depreciation per annum to be incurred by each type of Auto-rickshaw in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Purchase cost</th>
<th>Scrap value</th>
<th>Net capital depreciation for 5 yrs. per year</th>
<th>Col.2(−)</th>
<th>Col.4/5 years</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Col.3</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

| Three seaters          | 74,000        | 10,000      | 64,000                                      | 12,000 |

B) Petrol Operated:

| Three seaters          | 51,000        | 8,000       | 43,000                                      | 8,600  |

Source: Field Survey
Table No. 3.27: Fixed cost of Auto-rickshaw Operations (1996) in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Interest on Borrowed capital</th>
<th>Insurance taxes, etc.</th>
<th>Rent for Garage</th>
<th>Depreciation at the rate of Rs. 1000/- per month</th>
<th>Salaries</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>12,000</td>
<td>37,740</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters P0-3

9,990  2,350  600  12,000  12,000  37,740

B) Petrol Operated:

Three seaters P0-3

6,805  2,350  600  8,600  12,000  30,435

Source: Field Survey
Table NO.3.28 : Average cost of fuel inclusive of engine oil, lubricating oil etc. in Poona in the year 1996.

<table>
<thead>
<tr>
<th>Type of</th>
<th>Average cost</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Auto-rickshaw</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td></td>
</tr>
</tbody>
</table>

(in Rupees)

A) Diesel Operated:

<table>
<thead>
<tr>
<th>Three seaters</th>
<th>23,638/-</th>
<th>Enquiries about the fuel expenses for the month of Sept. 1996 are made and annual fuel cost is estimated.</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B) Petrol Operated:

<table>
<thead>
<tr>
<th>Three seaters</th>
<th>69,080/-</th>
<th>- do -</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO-3</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source : Table No. 3.38.
Table NO. 3.29: Average R & M expenses of Auto-rickshaw operation in the year (1996) in Poona.

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Average R &amp; M Expenses</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Average R &amp; M Expenses</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three seaters D0-3</td>
<td>3,100/-</td>
<td>Inclusive of expenditure on tyres and tubes</td>
</tr>
</tbody>
</table>

B) Petrol Operated:

<table>
<thead>
<tr>
<th>Type of Auto-rickshaw</th>
<th>Average R &amp; M Expenses</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>Three seaters P0-3</td>
<td>2,100/-</td>
<td>Inclusive of expenditure on tyres &amp; tubes.</td>
</tr>
</tbody>
</table>

Source: Field Survey.
Table No. 3.30: Estimation of amount of variable cost of auto-rickshaw operation incurred by owner in the year (1996-97) in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Fuel Cost</th>
<th>R &amp; M Expenses</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>A) Diesel Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seater</td>
<td>23,638/-</td>
<td>3,100/-</td>
<td>26,738/-</td>
</tr>
<tr>
<td>D0-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Petrol Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seater</td>
<td>69,080/-</td>
<td>2,100/-</td>
<td>71,180/-</td>
</tr>
<tr>
<td>PO-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Fuel Cost:

1. Diesel operated auto-rickshaw of three seater needs 8.4 litres of diesel per day and for the year (300 days) it is estimated to 2,520 litres costing Rs.23,638/-

2. Petrol operated auto-rickshaw of three seater needs 8.5 litres of petrol per day and for the year (300 days) it is estimated to 2,550 litres costing Rs.69,080/-

Average fuel cost per day is worked out on the basis of data provided by Ten New Auto-rickshaw (of less than two years in service) for the month of September 1996 vide instruction sheet attached to Questionnaire). Petrol cost (on 25th July, 1996) is Rs.27.09 and Diesel cost is Rs.9.38 per litre.
Table NO. 3.31: Amount of total cost of auto-rickshaw operation in the year (1996) in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Fixed cost</th>
<th>Variable cost</th>
<th>Total cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

- Small size
  - DO-3
  - Fixed cost: 37,740/-
  - Variable cost: 26,730/-
  - Total cost: 64,470/-

B) Petrol Operated:

- Three seaters
  - PO-3
  - Fixed cost: 30,435/-
  - Variable cost: 71,180/-
  - Total cost: 1,01,615/-

Source: Field Survey
Table NO. 3.32: Estimation of annual gross earnings from each type of auto-rickshaw (1996-97) in Poona.

(in Rupees)

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Gross earnings Per Ltr.</th>
<th>In year for 300 days (1996) Per day</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seater

<table>
<thead>
<tr>
<th></th>
<th>52.25</th>
<th>439/-</th>
<th>1,31,700/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>DO-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

B) Petrol Operated:

Three seater

<table>
<thead>
<tr>
<th></th>
<th>61.50</th>
<th>523/-</th>
<th>1,56,900/-</th>
</tr>
</thead>
<tbody>
<tr>
<td>PD-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Field Survey
Table NO. 3.33: Net earnings from each type of auto-rickshaw in APT business in Poona (1996-97).

(in Rupees)

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Gross Earnings</th>
<th>Total Cost</th>
<th>Net Earnings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters 1,31,700/-  64,478/-  (+) 67,222/-

B) Petrol Operated:

Three seaters 1,56,900/-  101,615/-  (+) 55,285/-

Source: Field Survey
Table NO. 3.34: Scale of annual operation of each types of Auto-rickshaw in APT Business in Poona.

(in Rupees)

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per litre Kms. operated</th>
<th>Per day Kms. operated</th>
<th>Kms. operated in the year</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seater D0-3

23.20  195/-  58,500/-

B) Petrol Operated:

Three seater PD-3

24.75  210/-  63,000/-

Source: Field Survey
Table No. 3.35: Estimation of operational cost and profit of different types of Auto-rickshaw for 1996-97 in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Kms. operated</th>
<th>Gross earnings in year</th>
<th>Total cost in year</th>
<th>Per kilometre operational earnings</th>
<th>Gross earnings</th>
<th>Cost</th>
<th>Profit</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td>6</td>
<td>7</td>
</tr>
<tr>
<td>A) Diesel Operated:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seater 50-3</td>
<td>58,500</td>
<td>1,31,700</td>
<td>64,478</td>
<td>2.25</td>
<td>1.10</td>
<td>(+) 1.15</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Petrol Operated:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seater 50-3</td>
<td>63,000</td>
<td>1,56,900</td>
<td>1,01,615</td>
<td>2.49</td>
<td>1.61</td>
<td>(+) 0.88</td>
<td></td>
</tr>
</tbody>
</table>

Source: Table No. 3.31, 3.32 and 3.34.
**Table No. 3.36**: Estimation of per kilometre variable cost for different types of Auto-rickshaw for the year 1996–97 in Poona. (in Rupees)

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Total Variable Cost</th>
<th>Per kilometre variable cost for</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2</td>
<td>Fuel</td>
<td>3</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>A) Diesel Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seaters</td>
<td>26,738/-</td>
<td>0.40</td>
<td>0.06</td>
</tr>
<tr>
<td>D0-3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B) Petrol Operated:</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Three seaters</td>
<td>71,180/-</td>
<td>1.10</td>
<td>0.03</td>
</tr>
<tr>
<td>P0-3</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Table No. 3.30 and 3.34.
Table No. 3.37: Per kilometre fixed cost of different types of Auto-rickshaw in Poona. (in Rupees)

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Total fixed cost</th>
<th>Per kilometre fixed cost for -</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Interest</td>
<td>Insurance, Rent for</td>
</tr>
<tr>
<td></td>
<td></td>
<td>on taxes, etc.</td>
<td>Garage</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
<td>4</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters 00-3 37,740 0.17 0.04 0.01 0.21 0.22 0.65

B) Petrol Operated:

Three seaters 00-3 30,435 0.11 0.04 0.01 0.19 0.14 0.49

Source: Table No. 3.27 and 3.34.
Table No. 3.38: Per kilometre fixed, variables and total cost of different types of auto-rickshaw vehicle in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per Km. Fixed cost</th>
<th>Per Km. Variable cost</th>
<th>Per Km. Total cost (2 + 3)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters

<table>
<thead>
<tr>
<th></th>
<th>0.65</th>
<th>0.46</th>
<th>1.11</th>
</tr>
</thead>
</table>

B) Petrol Operated:

Three seaters

<table>
<thead>
<tr>
<th></th>
<th>0.49</th>
<th>1.13</th>
<th>1.62</th>
</tr>
</thead>
</table>

Source: Table No. 3.31 and 3.34.
Table NO. 3.39: Capacity utilization of each type of auto-rickshaw in Poona.

<table>
<thead>
<tr>
<th>Types of Auto-rickshaw</th>
<th>Per day capacity available</th>
<th>Per day capacity used in passenger Kms.</th>
<th>Intensity of utilization x 100</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>(3)-(2)</td>
</tr>
<tr>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

A) Diesel Operated:

Three seaters DO-3
1,000 580 54

B) Petrol Operated:

Three seaters PO-3
1,000 630 58

1. As opinion by the operators that they could operate vehicle daily, if the demand is in full swing.

2. Passenger Kms. = Seating capacity x Per day Kms. operation.

Note:

Per day available vehicle capacity is estimated under the assumption that the vehicle should run for 18 hours in the Poona city at the speed of 20 Kms. per hour. It means that total kms. that could be covered in the day by the vehicle would be 360. In other words, auto-rickshaw should cover at least 360 kilometers per day in Poona, so as to exhaust fully its installed capacity. The installed capacity of the vehicle is measured in terms of passenger kms. (kilometers covered x seats in the vehicle = passenger kms.). With this notion as the installed capacity, for DO-3 is 1000 and for PO-3 is also 1000 passengers kilometers per day, since DO-3/PO-3 has 3 seats.

Source: Field Survey.
Table No. 3.40: A comparative investment structure of APT Business in Poona Vs Aurangabad (1996).

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Poona</th>
<th>Aurangabad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DO-3</td>
<td>PO-3</td>
</tr>
<tr>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>i) Purchase Price</td>
<td>74,000</td>
<td>51,000</td>
</tr>
<tr>
<td>ii) Owner's Contribution</td>
<td>18,500</td>
<td>12,750</td>
</tr>
<tr>
<td>iii) Bank Loan</td>
<td>55,500</td>
<td>38,250</td>
</tr>
</tbody>
</table>

Source: Field Survey.
Table No. 3.41: A Comparative cost-structure of APT business in Poona Vs. Aurangabad (1996).

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Poona</th>
<th></th>
<th>Aurangabad</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DO-3</td>
<td>PO-3</td>
<td>DO-3</td>
<td>PO-3</td>
</tr>
<tr>
<td>i. Fixed Cost</td>
<td>37,740</td>
<td>30,435</td>
<td>31,340</td>
<td>26,135</td>
</tr>
<tr>
<td>ii. Variable cost</td>
<td>26,738</td>
<td>71,180</td>
<td>11,249</td>
<td>28,532</td>
</tr>
<tr>
<td>Total Cost</td>
<td>64,478</td>
<td>1,01,615</td>
<td>42,589</td>
<td>54,667</td>
</tr>
</tbody>
</table>

Source: Field Survey.

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Poona DO-3</th>
<th>Poona PO-3</th>
<th>Aurangabad DO-3</th>
<th>Aurangabad PO-3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Total Cost</td>
<td>64,478</td>
<td>1,01,615</td>
<td>42,589</td>
<td>54,487</td>
</tr>
<tr>
<td>2. Total Earnings</td>
<td>1,31,700</td>
<td>1,56,900</td>
<td>49,800</td>
<td>56,400</td>
</tr>
<tr>
<td>3. Net profits</td>
<td>67,222</td>
<td>55,285</td>
<td>7,211</td>
<td>1,913</td>
</tr>
<tr>
<td>4. Investment</td>
<td>74,000</td>
<td>51,000</td>
<td>74,000</td>
<td>51,000</td>
</tr>
<tr>
<td>5. ROI</td>
<td>90.80%</td>
<td>108.40%</td>
<td>9.74%</td>
<td>3.75%</td>
</tr>
</tbody>
</table>

Source: Field Survey.
Table No. 3.43: A comparative intensity of utilization of auto-rickshaw in Poona Vs Aurangabad (1996).

<table>
<thead>
<tr>
<th>Particulars</th>
<th>Poona</th>
<th>Aurangabad</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DO-3</td>
<td>PO-3</td>
</tr>
<tr>
<td>1. Installed capacity</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>2. Actual capacity used</td>
<td>595</td>
<td>630</td>
</tr>
<tr>
<td>3. Percentage of (2) as to (1)</td>
<td>54</td>
<td>58</td>
</tr>
</tbody>
</table>

Source: Field Survey.