CHAPTER X

SUMMARY, CONCLUSIONS AND POLICY IMPLICATIONS
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10.1: A Resume of the findings

The present study, it may be recalled, pertained to the depreciation accounting principles, policies and practices in selected enterprises of four industries (namely, jute, textile, chemical and pharmaceutical and steel) in public and private sectors of Bangladesh, over a period of ten years from January 1972 to December 1981. In some instances, however, recourse was made to earlier data as well. More particularly, the study critically examined the prevailing depreciation policies and practices in the country with the help of theories, concepts and researches in the field of depreciation accounting. It was basically an applied study.

The problem area of this work centred around the following specific objectives:

1) To study the: (a) actual and normative practices of depreciation principles; (b) factors guiding depreciation policies; (c) depreciation concepts accepted as a matter of policy; (d) purposes of charging depreciation; (e) factors considered for selection of depreciation methods; (f) factors influencing depreciation rate fixation; (g) factors and types
of lives considered for the estimation of working life of fixed assets and (h) applicability of Makeham's law (a law of mortality for constructing the life table of human beings) in estimating the working life of machines, with special reference to jute looms.

2) To study the depreciation accounting methods, rates, bases and treatment.

3) To study the impact of fixed assets' working life estimation on depreciation, cost and profitability.

4) To examine whether depreciation has any impact on financing and cash flow.

5) To study whether there is any influence of Bangladesh Income-Tax Law on depreciation accounting.

6) To examine whether inflation is given effect to in depreciation accounting.

7) To design and propose a systematic and normative model for depreciation calculation.

Following on this focus, chapter II undertook a critical review of the literature (of Bangladesh and other countries) in the field of depreciation accounting. However, as indicated earlier, emphasis was placed on the researches and studies on depreciation accounting in the last three decades mainly. Availability of literature of these decades was the main
reason for this. Various aspects like origin and historical
development of depreciation, depreciation concepts and methods,
depreciation vis-a-vis source of funds, depreciation accounting
and inflation etc. were highlighted in the review of literature.

Against this background, chapter III delineated the research
methodology for the study. Eighteen null hypotheses were
formulated. All these hypotheses were tested both across indus-
tries and between sectors. Out of the population for the study,
of 265 industrial enterprises (in four different industries of
public and private sectors of Bangladesh), 149 were from the
public sector and 116 from the private sector. 66 enterprises
were drawn as samples by using stratified random sampling
technique. 40 sampling units represented the public sector and
26 units the private sector. Primary data were collected by
interviewing 82 policy dealing personnel (37 from the public
sector and 45 from the private sector) and 173 operating
(accounting) personnel (128 from the public sector and 45 from
the private sector). Published materials and also accounting
reports, statements, manuals etc. of individual enterprises
were used as secondary sources of data. It is worth mentioning
here that apart from the said sixty-six industrial undertakings,
two more organisations, namely, Bangladesh Lamps Limited and
Bangladesh Electrical Industries (Private) Limited were also
studied but not aggregated for statistical analysis. This
detour was intended to provide a reference point for the study.
A word about interview schedules. Four sets of interview schedules were administered. The first set was meant for policy dealing personnel, the second set for operating personnel and the third set for chief operating personnel of each of 66 sampling units. The fourth set was used for interviewing both policy dealing and operating personnel of two manufacturing companies practising depreciation accounting based on inflation accounting.

Another word about the profile of the policy dealing and operating personnel meant for this study. The policy dealing personnel were directly or indirectly concerned with the formulation of depreciation policies. They were normally professional experts and/or had considerable job experience. On the other hand, the operating personnel were involved in the implementation of depreciation policies. They had also job experience.

Finally in testing the tenability of null hypotheses, the inferential tests used were (1) Chi-square test for independent samples, (2) Fisher's exact probability test, (3) Wilcoxon matched-pairs signed-ranks test, (4) Kendall Coefficient of Concordance \( W \) statistic, (5) Kruskal-Wallis one-way analysis of variance by ranks, (6) Mann-Whitney U statistic and (7) Spearman rank correlation coefficient \( r_s \). And two levels of significance, namely, \( \alpha = 0.05 \) and \( \alpha = 0.01 \) were used to test the statistical significance of association and difference of responses as well as ranks.
Chapter IV, taking a broader sweep of the problem, analysed the responses of policy dealing personnel on various issues of depreciation accounting. Part-A of this chapter dealt with the salient issues of depreciation principles and policies and Part-B addressed itself to testing the applicability of Makeham’s Law in estimating the working life of jute looms for depreciation calculation.

Summarizing data analyses of this chapter, the following major findings may be stated:

1. Findings regarding the practice of different depreciation principles listed from (a) to (j) at pages 115 - 116 in chapter IV. In Bangladesh in the industries under study, mainly two depreciation principles, namely (g) "Consistency in the use of depreciation method" and (h) "depreciation as a measure of fair ascertained of cost" were practised to a "maximum" extent. On the other hand, (b) "Consideration of residual value", (e) Obsolescence of an asset" and (f) "depreciation rate is to be in consonance with the actual time for which an asset is used" were the "minimum" practised depreciation principles. Principles (i) "charging of depreciation keeping in view inflation" and (j) "charging of depreciation in proportion to services or outputs from an asset" were not at all practised. The policy dealing personnel, across industries, statistically did not have significant difference of opinion with regard to these depreciation principles. But they
significantly differed in opinion with respect to the actual practice of depreciation principles (a) "charging of depreciation in terms of cost allocation", (c) "equitably charging of depreciation over the estimated life of an asset" and (d) "accurate estimation of useful life". For reference, table 4.1 in appendix-A. Only principles (i) and (j) not included in the table.

From the viewpoint of inter-sector comparisons, it was found that depreciation principle (c) was practised to a "maximum" extent in the public sector, while in the private sector its practice was "neither minimum nor maximum". As to depreciation principle (d), its practice was found to be "minimum" in private sector and "just above minimum" in public sector. In both the sectors, the "maximum" practised depreciation principles were (g) and (h). All that is according to the majority of policy dealing personnel. In respect of depreciation principles (a), (b), (e) and (f), quite a large majority of respondents of both the sectors viewed that these principles were actually practised to a "minimum" extent. Regarding the result of statistical analysis, there was found no significant difference of opinions amongst the respondents between sectors with respect to the actual practice of depreciation principles (a), (b), (d), (e), (f), (g) and (h) above. A significant difference of opinions was evident between sectors with regard to the actual practice of depreciation principle (c) only. For reference, table 4.2 in appendix-A. Only principles (i) and (j) not included in the table.
(2) Now, comes the question — how far did the actual practice of the aforesaid depreciation principles conform to the 'ideal' (normative)? While looking at the issue industry-wise, it was found that in case of principle (a), there existed statistically no significant difference between its actual and normative practices in all the industries excepting chemical and pharmaceuticals. In respect of principles (g) and (h) also, there was found statistically no significant difference between actual and normative practices in all the studied industries. But in case of the remaining depreciation principles, statistically a significant difference between actual and normative practices was found. While looking at the issue sector-wise, the analysis revealed that with respect to all the depreciation principles except for (a) and (h), there was statistically a significant difference between the actual and the normative. [For reference, tables 4.3 and 4.4 in appendix-A].

(3) According to the majority of respondents of almost all the industries and sectors included in the study, "traditional and customary practice" was the most important guiding factor of depreciation policies. Next in importance was "advice and guidance of professional chartered accountants". "Prevailing legal codes of the country, like companies Act, Income-Tax Act", etc., was least important. In giving consideration to these factors guiding depreciation policies, there was no significant disparity of opinions amongst the policy dealing personnel both across industries and between sectors. [For reference, tables 4.5 and 4.6 in chapter IV].
(4) Urged to indicate the concepts of depreciation accepted as a matter of policy, the respondents gave interesting responses. "Depreciation as wear and tear or physical deterioration of fixed assets" and "depreciation as a fall or decrease or diminution in the value of fixed assets" were accepted everywhere, regardless of industry or sector under study. The majority of respondents reported that "depreciation as the maximum allowance admissible under Income-Tax Act for tax purposes" was not widely accepted for financial reporting. With respect to these concepts, statistically no significant difference of opinions amongst the respondents, whether across industries or between sectors, was found. "Depreciation as the systematic and rational allocation of a fixed asset's original cost over its life" was accepted in jute and steel industries as against textile and chemical and pharmaceutical industries where this concept was not that much welcome. Then, from the angle of inter-sector comparison, it was found that the Public sector widely accepted this concept and the private sector did not. All this was viewed by an appreciably high proportion of respondents. In respect of this concept, statistically a significant disparity of opinions was found amongst the respondents both across industries and between sectors.

Furthermore, for many, "depreciation as a part of replacement cost of fixed assets" and "depreciation as the difference, from the beginning to the end of the period, in asset value measured in terms of discounted present value of future cash
inflows" were unheard of concepts, so to speak. These two concepts only not included in tables 4.7 and 4.8 in Chapter IV.

(5) Regarding purposes of charging depreciation, it was found that as compared with the purpose of "having the advantage of tax relief", other purposes like "allocation of cost for fairly measuring cost of production and consequential profit or loss", "proper evaluation of fixed assets", "financing the replacement of fixed assets" and "financing the working capital needs" were the largely considered motivating factors of charging depreciation in each industry and sector under study. And, there was statistically no significant difference of opinion amongst the respondents, both across industries and between sectors, with respect to the finding of the latter four purposes. But so far as the first purpose (stated above) is concerned, the policy dealing personnel of public sector significantly differed with those of private sector. A good majority of the respondents of private sector considered it a purpose whereas most of them of public sector ignored its importance as a purpose of charging depreciation. For reference, tables 4.9 and 4.10 in Chapter IV.

(6) On the issue of factors influencing the selection of depreciation methods, it was observed that the influence of "simplicity in calculation" was overwhelming for selecting
straight-line method; whereas, it was assigned the third rank for the selection of reducing-balance method. The position was exactly reversed for the factor — "as a matter of traditional practice". This got the first rank from those using reducing-balance method and the third rank from those who chose the straight-line method. Those using straight-line method ranked "charging of higher depreciation in view of higher income from greater serviceability of the asset in the initial years and vice-versa in the later years" as the least important factor. And "recovery of funds for the replacement of an asset" was considered to be the least influential factor by those using reducing-balance method. Finally, the rankings given to different factors having influence on the selection of straight-line and reducing-balance methods were not significantly correlated. For reference, table 4.11 in chapter IV.

(7) As to the ranking of different factors influencing depreciation rate fixation, it was found that in both jute and chemical and pharmaceutical industries, the "most influential", "very much influential" and "much influential" (that is, first, second and third ranks) factors were (a) "physical/useful life of fixed assets", (d) "nature of assets" and (f) "depreciation allowance rates prescribed by Tax Codes" respectively. On the other hand, "nature of assets" got the first rank (most influential), "depreciation allowance rates prescribed by the Tax Codes" "the second rank (very much influential) and "physical/useful life of fixed assets" the third rank (much influential) in case of textile and steel industries. Looking at the problem
from the viewpoint of inter-sector comparisons, it was observed that "nature of assets" and "physical/useful life of fixed assets" were considered the "most influential" and "very much influential" factors respectively in both public and private sectors. Interestingly, in almost all cases, regardless of the industry or sector, "arbitrary estimation", "asset utilisation intensity" and "technological development" were the "less influential" (fifth rank), "much less influential" (sixth rank) and "least influential" (seventh and last rank) factors respectively. (For reference, tables 4.12 and 4.13 in chapter IV).

In this regard, the findings of statistical analyses were as follows:

(i) There existed a significant agreement in the rankings given by the policy dealing personnel to the factors having influence on depreciation rate fixation within each industry and each sector under study. (For reference, tables 4.14 and 4.15 in appendix-A).

(ii) There was a significant difference of opinion amongst the policy dealing personnel across industries with respect to the ranking of factors (a) "physical/useful life of fixed assets", (c) "technological development", (d) "nature of assets" and (f) "depreciation allowance rates prescribed by Tax Codes" influencing depreciation rate fixation. And, regarding the ranking of other factors (b) "asset utilisation intensity", 
(e) "depreciation rates followed by other units in the same sector of the same industry", and (g) "arbitrary estimation", the policy dealing personnel did not significantly differ from one industry to another. \( \text{For reference, table 4.16 in appendix-A.} \)

(iii) No significant difference of opinion was evident amongst the policy dealing personnel between sectors with regard to the ranking of factors (a), (b), (c) and (d); and, on the other hand, a significant difference of opinion amongst the policy dealing personnel was found to exist between sectors with respect to the ranking of factors (e), (f) and (g) influencing depreciation rate fixation. \( \text{For reference, table 4.17 in Appendix-A.} \)

(ii) In respect of factors considered for the estimation of useful life of fixed assets, it was found that both industry-wise and sector-wise, "manufacturer's or suppliers' specification", "past experience" and "mechanical engineers' recommendation" appeared to be mainly considered in estimating the useful life of machinery. "Arbitrary estimation" was not that much considered in the matter. "Tax Codes" was apparently the least important factor.

In regard to estimating the useful life of buildings, both industry-wise and sector-wise, "civil engineers' recommendation", was given the first consideration followed by "past experience" and thirdly "arbitrary estimation". "Tax Codes" was the least considered factor in the matter.
In case of furniture, whether industry-wise or sector-wise, "past experience" was given the top most priority. Secondly "Tax Codes"; thirdly "arbitrary estimation" and lastly, "manufacturers' or suppliers' specification" were considered.

As to life estimation of vehicles, both industry-wise and sector-wise, first consideration was given to "manufacturers' or suppliers' specification" and second consideration to "mechanical engineers' recommendations". Thirdly, "past experience" and "Tax Codes" were given almost equal consideration in this regard. "Arbitrary estimation" appeared to have played a minimal role in the matter.

Furthermore, from the angle of statistical analysis, no significant difference of opinion was evident amongst the policy dealing personnel, both across industries and between sectors, with respect to the consideration of different factors in estimating the useful life of machinery, buildings, furniture and vehicles. For reference, tables 4.18 and 4.19 in appendix-A.

(9) Regarding the types of lives considered in estimating the useful life of machines, in particular, the finding was that in both the sectors of all the studied industries, all of the policy dealing personnel stated that they considered only "physical life of machines". Other types of lives like "technological life", and "market life of the machine's output" did not come under their consideration. For reference, table 4.20 in chapter IV.
(10) It emerged from the opinion survey pertaining to the applicability of Makeham's Law (the law of mortality for constructing the life table of human beings) in estimating the useful life of machines that it would be unjustified to apply Makeham's Law. And, there was statistically no significant disparity of opinion amongst the policy dealing personnel, both across industries and between sectors, in the matter. Also the experimental work in connection with the applicability of the said law in estimating the useful life of jute looms especially, revealed the same finding. The parameters involved in loom's life expectancy were not identical with those involved in human survival probability. There was, in fact, found no common ground of comparison between the two situations. Hence, ultimately, the finding was that Makeham's law would not be applicable in estimating the useful life of at least jute looms (of the studied jute mills) for the purpose of calculating depreciation. [For reference, tables 4.21, 4.22 and 4.23 in appendix-A].

Chapter 7 dealt with the operational aspects, more specifically, methods, rates, bases and treatment. Because of its focus on operational aspects as distinct from depreciation principles and policies, the data gathered from operating personnel were analysed to obtain an understanding of depreciation practices. The results of the analyses of data may be summarized as follows:

(1) As regards depreciation methods practised, the enterprises of jute industry largely followed straight-line method, while those
of textile, chemical & pharmaceutical and steel industries mostly used reducing-balance method. From the view point of sector-wise analysis, it was found that by and large, both public and private sector enterprises, preferred using reducing-balance method to straight-line method. But private sector enterprises favoured the reducing-balance method more as compared with the public sector organisations. Statistically also, a significant difference was evident, both across industries and between sectors, with respect to the use of depreciation methods. For reference, tables 5.1 and 5.2 in chapter V.

(2) Regarding the change-over from one method to another, it was found that out of sixty-six enterprises under study, only six jute mills in the public sector and one pharmaceutical company in the private sector changed their depreciation methods. Those jute mills shifted from reducing-balance method to straight-line method in 1972 (after nationalisation of jute industry in Bangladesh) under the direction of Bangladesh Jute Mills Corporation which decided to bring uniformity in the depreciation method of jute industry in public sector. And, that pharmaceutical company shifted from straight-line method to reducing-balance method in 1970 to maintain uniformity with the depreciation method used by almost all the pharmaceutical companies in the private sector of the country. Neither the jute mills nor the pharmaceutical company (as referred to above) made any adjustment for their change-over from one method to another.

(3) Pertaining to suggestions for change in depreciation

* In 1972 after nationalisation of industries, straight-line and reducing-balance methods were introduced for jute and textile industries respectively in public sector for the purpose of uniformity. No such uniform methods were introduced for public sector chemical and steel industries.
methods, the findings were three-fold:

(a) The majority of operating personnel, regardless of the industry or sector under study, did not suggest any change in depreciation method. Statistically no significant difference of opinions was found in this respect, whether across industries or between sectors. For reference, tables 5.3 and 5.4 in chapter V.

(b) Out of those operating personnel who suggested a change in method, quite a large majority in chemical and pharmaceutical and textile industries suggested a change-over to straight-line method, whereas reducing-balance method was recommended by a good proportion of them only in jute industry. In steel industry, there was a considerable proportion of responses in favour of change-over to depreciation fund method. So far as the finding of inter-sector comparisons is concerned, in public sector most of the operating personnel gave a suggestion for change-over to straight-line method, first and then to depreciation-fund method. Reducing-balance method was recommended by the lowest percentage of respondents. In private sector, a very high proportion of them suggested straight-line method while a small percentage recommended depreciation fund method. Ultimately, therefore, it emerges that the widely suggested method was straight-line method. For reference, tables 5.5 and 5.6 in chapter V.

(c) All those who suggested change-over to straight-line method reported that (i) uniformity in depreciation charge and
(ii) simplicity in computation were the main reasons for their suggestion. All those who recommended change-over to reducing-balance method opined that (i) abiding by Income Tax Rules, (ii) matching the declining serviceability of assets and (iii) maintenance of uniformity with other units impelled them to opt for change-over to reducing-balance method. In the opinion of those who suggested change-over to depreciation fund method, possibility of getting required funds for financing the replacement of fixed assets was the vital cause for their recommendation.

(4) With regard to the bases used for charging depreciation in the studied enterprises, "Original cost" and "written-down value" were found to be used. Only two manufacturing concerns, namely, Bangladesh Lamps Limited and Bangladesh Electrical Industries Private Limited were found to charge depreciation on replacement cost basis.

(5) It stems from the analyses pertaining to rates followed in different industrial enterprises that after nationalisation of industries in Bangladesh in 1972, in jute and textile industries of public sector, Bangladesh Jute Mills Corporation and Bangladesh Textile Mills Corporation respectively prescribed uniform depreciation rates. On the other hand, in chemical & pharmaceutical and steel industries of public sector, uniform depreciation rates were not introduced by their respective sector corporations — Bangladesh Chemical Industries Corporation and Bangladesh Steel and Engineering Corporation. Needless to say, there was found
no uniformity in the depreciation rates used by the different enterprises of the studied industries in private sector.

(6) In case of almost all fixed assets, jute industry charged depreciation at higher rates than all other industries, and next was textile industry in this regard. Looking at the issue sector-wise, it was found that the rates of depreciation charged on most of the fixed assets by public sector enterprises were far higher than those charged by private sector undertakings. In case of furniture and fixture, even though both public and private sector concerns mostly used the "lowest" rate-interval (2.5% - 7.4%), quite a large percentage of the private sector organisations, as compared with public sector enterprises, charged depreciation at "moderate" rates (7.5% - 12.4%). In case of vehicles, undertakings of both sectors followed, by and large, "higher" (17.5% - 22.4%) and "highest" (22.5% and above) rates. For reference, tables 5.7 and 5.8 in chapter V.7.

(7) Regarding suggestions for change in depreciation rates, it emerged from the analysis that an appreciably large majority of the operating personnel of all the studied industries in both public and private sectors suggested for increasing the accounting depreciation rates currently applicable to different fixed assets. Only a few operating personnel expressed contrary view by suggesting a decrease in depreciation rates. On this issue statistically, no significant disparity of opinions was evident, both across industries and between sectors. For reference, tables 5.9 and 5.10 in chapter V.7.
(8) In respect of shift-wise accounting depreciation rates, none of the enterprises, whether industry-wise or sector-wise, was observed to charge extra depreciation for double-shift and triple-shift uses of machines. But on surveying the opinions of the operating personnel, it was found that an overwhelming majority of them of each industry in both the sectors under study advocated for extra depreciation rates for extra-shift uses of machines. And in this respect, there was statistically a significant unanimity of their opinions, both across industries and between sectors. For reference, tables 5.11 and 5.12 in Chapter V.

(9) In all the industrial enterprises under study, it was observed that every year the amount of depreciation was debited to manufacturing/profit or loss accounts and the same amount was shown as a deduction from the fixed assets' value in the schedule of fixed assets and then the resultant figure was taken to the asset side of the balance sheet.

(10) All the operating personnel viewed that only price fluctuation in the market and neither over-charging nor under-charging of depreciation in prior years caused gains or losses on the sales of fixed assets. But the researcher could not subscribe to this view, because in real life, gain or loss on the sale of fixed assets very much depend upon over/under charging of depreciation as well.

(11) As to the mechanics of bookkeeping on sale of fixed assets resulting in profit or loss or just break-even, different
practices were found. Some treated profit on sale of fixed assets as equivalent to annual regular income or miscellaneous income and merged it with operating income in the profit and loss account. Others were found to transfer it to capital reserve account. In regard to losses, resulting from such transactions, the similar approach was observed. Some treated it as capital loss and some as revenue loss. The researcher, however, thinks that the Management of some enterprises was not very logical, in treating the capital profit as part of regular income. But in case of break-even (no profit - no loss on sale) situation, no such problem did arise.

(12) As to impact of devaluation of "taka" quite a number of organisations gave effect to it by increasing the book value of assets via "plant and machinery devaluation Adjustment Account" as an offset and by increasing the outstanding loans and charging depreciation on the increased book value. Some of the enterprises, notwithstanding their outstanding loan against the importation of machinery, ignored the effect of devaluation of 'taka' in depreciation accounting. But in this regard, all the operating personnel of these enterprises felt that this ignoring the effect of devaluation caused under-charging of depreciation leading to distortion of cost.

Chapter VI examined the impact of working life estimation of fixed assets (with special reference to machines) on depreciation, cost and profitability. The findings of this chapter may be summarized as here-under:
In the studied industrial organisations, only the cases of assets having useful lives after the expiry of their estimated working lives were found. Many of the enterprises using reducing-balance method could not state whether the estimated working lives of their fixed assets were over or not. The absence of fixed assets' register in most of the enterprises was one of the reasons for their failure to ascertain whether the assets' lives expired or not.

From the case studies of 250 looms, one caustic chloric plant, one finishing mill machine and one electric arc furnace of four different enterprises, it was found that the underestimation of the useful lives of plant assets led to overcharging of depreciation thereby raising the cost of production leading, in turn, to decline in profitability to the extent of Tk. 1,24,035.99 over their total estimated lives. This limited area of case studies has sufficiently revealed the extent of adverse influence, depreciation based on under-estimated lives of fixed assets has on cost and profitability. For reference, table 6.2 in chapter VI.

Chapter VII analysed the impact of depreciation on financing and cash flow. The major findings may be summed up thus:

None of the industrial organisations who took the "Balancing, Modernization, and Replacement" (BMR) scheme for implementation, reported to have used depreciation for financing the said scheme. The majority of operating personnel of jute
and chemical & pharmaceutical industries argued for creation of specific reserve for financing the above scheme. And in case of textile and steel industries, creation of general reserve was advocated by most of them. From the viewpoint of sector-wise analysis, it was found that both the sectors preferred creation of specific reserve to creation of general reserve for financing the BMR scheme. But very few operating personnel, regardless of any industry or sector, were in favour of creating additional reserve, by way of added charge for depreciation.

For reference, tables 7.4 and 7.5 in chapter VII.

(2) It was found through case studies of Chittagong Steel Mills Ltd., Chittagong and Quraishi Steels Ltd., Khulna that depreciation per se did not constitute a source of funds. The difference between sales and all fund-consuming expenses to the tune of Tk. 33,24,271 (that is, Tk. 5,00,29,002 minus Tk. 4,67,04,731) represented funds generated by operations entirely independently of the depreciation amount of Tk. 3,67,673 charged in accounts. Depreciation was simply an item of product cost and a valid operating charge. It was not a take-it-or-leave-it item of cost.

(3) The result of opinion survey indicated that an appreciably large majority of both policy dealing and operating personnel supported the view of regarding depreciation as a source of funds. And in this regard, there was statistically no significant difference of opinion amongst the respondents both across industries and between sectors. For reference, tables 7.8 and 7.9 in chapter VII.
(4) While viewing depreciation as a source of funds *prima facie*, the respondents were also prompt to emphasize certain constraints in the utilization of depreciation provision for financing purposes: (i) there would arise difficulty in releasing the amount (equal to accumulated depreciation charge) locked up in the business of a concern without impeding normal round of operations; (ii) a reduction in working capital fund because of investment of the depreciation amount outside would compel the business to resort to borrowing at a higher rate of interest for normal growth; (iii) in case of borrowing resorted to, resulting from investment of the depreciation amount outside the business, a cut in dividend payout would follow because of necessarily giving prior attention to pay off borrowings and interest thereon; and this might radically alter the capital structure of the enterprise; (iv) even if, in certain quarters, depreciation were considered a source of funds, money equal to depreciation charge on original cost would be inadequate to finance the replacement of fixed assets in times of inflation. For reference, table 7.11 in chapter VII.

(5) It emanated from the case studies of Farrokh Chemical Industries Ltd., Chittagong that over the period from 1971-72 to 1979-80, there was a saving of tax of Tk. 76,045 due to tax depreciation and a saving of 'contribution to national exchequer (that is, dividend) and 'contribution to workers' profit participation fund' to the extent of Tk. 8,565 because of charging
accounting depreciation. This resulted in an increase in cash flow of Tk. 84,610 (that is, Tk. 76,045 + Tk. 8,565). For reference, table 7.12 in chapter VII.

(6) Hence, the ultimate finding of this chapter is that depreciation in itself is not a source of funds. It is an integral part of product cost. But the only sense in which depreciation can be said to have an impact on cash flow is that it restricts cash outflow by reducing: (a) dividend payment or contribution to national exchequer, (b) contribution to workers' profit participation fund and (c) tax payment.

Chapter VIII examined the influence of Income-Tax Law on depreciation accounting. From the analyses and interpretation made in this chapter, it emerged that neither the companies Act nor the Income-Tax Law of Bangladesh wanted the industrial enterprises, for financial reporting purposes, to conform to the depreciation method and rates as prescribed under Tax Rules. In these statutes, no mandatory guidelines were provided for charging accounting depreciation. Nevertheless, the discussion on (a) Tax Codes as guides to depreciation accounting principles and policies, (b) Tax Law vis-a-vis accounting depreciation rates, (c) Tax Law vis-a-vis accounting depreciation methods and bases, (d) Tax Law and guidelines for depreciation rates for extra-shift uses of machines and (e) comments of the accounting personnel on Tax Law prescribed depreciation allowances, on the whole, revealed that while fixing accounting depreciation rates, the industrial enterprises under study were not oblivious of Tax Law prescribed depreciation
allowance rates. Accounting depreciation rates, method and basis were found to have congruence with Tax Law prescribed depreciation rates, method and basis in several cases. The whole discussion, therefore, manifested the reflection of the influence of Tax Law, in some form or the other, upon the accounting depreciation principles, policies and practices.

Chapter IX explicitly faced the critical issue of inflation in depreciation accounting. This chapter comprised two sections. However, the findings may be summed up as follows:

(1) The discussions made in Section-A spelt out that although the studied organisations in bulk not yet started using Current Value Accounting systematically and although the majority of policy dealing and operating personnel did not recommend Current Value Accounting and its procedures and techniques, yet the feeling for the need for introducing Current Value Accounting to adjust depreciation for recording the effect of inflation already started working in the minds of quite a number of respondents. They felt that something in the nature of Current Value Accounting was the need of the hour. Indeed, they went further; that without such adjustment of inflation in depreciation accounting, the 'bottom-line profit' would be largely illusory and paper profit, and industrial enterprises would, unwittingly, experience tremendous capital erosion. Their concern seemed to be a new awakening.

* means net profit in this context.
(2) It was evident from the discussions in section-B that two manufacturing companies in Bangladesh (Bangladesh Lamps Ltd. and Bangladesh Electrical Industries Private Ltd.) had been charging depreciation under inflation accounting since their inception. They were found to maintain historical cost accounts too, side by side. They were keeping accounts completely under the instructions of their parent company, N.V. Philips Gloelampenfabrieken, Holland. The distinctive feature of their accounting was that they maintained a separate ledger called "Statistical ledger". From the studies of three assets, namely, "60 Head Burning Frame", "Punching clock" and "Wooden Secretariat table", it is interesting to point out that in case of the first asset, depreciation was charged under inflation accounting even after the expiry of its working life and "Extra-provision for depreciation Account" was maintained thereafter. So far as the second asset is concerned, since its life did not expire at the time of survey, depreciation was found to be charged on replacement cost in the normal way and there was no need for "Extra-Provision for depreciation Account". In case of the third asset, no depreciation was, in fact, charged in replacement cost accounting records because under the system of accounting prescribed by N.V. Philips, Holland, the cost of wooden furniture was not to be capitalised but to be charged in the form of revenue expenditure in the profit and loss account in the very first year.

10:12: Conclusions

Using the information from the practice and thinking of the studied industries in both the sectors of Bangladesh, this study
tried to look into various aspects of the country's depreciation accounting principles, policies and practices of different enterprises. The philosophy, knowledge and contribution of experts in theory and practice of depreciation in general were used as the yardsticks to evaluate depreciation accounting in Bangladesh. More concretely, the study focussed on various aspects of methods, rates, bases and mechanics of accounting for depreciation; on impact of working life estimation of fixed assets on depreciation, cost and profitability; and on implications of depreciation on replacement financing and cash flow. And ambivalence of the statutes in this area and raging inflation in the country provided the background for the study. The study indicated an overall unanimity of opinions amongst the policy dealing and operating personnel, both across industries and between sectors, with respect to various aspects of depreciation principles, policies and practices. At the same time, a significant disparity of opinions was also evident on certain other issues.

On the question of depreciation as a source of funds, the policy dealing and operating personnel, in most cases, felt that depreciation per se was a source of funds. But, in fact, the results of case studies indicated that they were holding misconception, although it was also found that depreciation had indirect impact on cash flow. Be that as it may, what is important is that financing of fixed assets' replacement and working capital needs is more related to sales revenue rather than to depreciation
policy which should not be confused with financial policy.

On the issue of Tax Laws' influence on depreciation accounting principles, policies and practices, it may be concluded on the basis of the findings that despite lack of directives in the companies Act and the Income-Tax Law regarding accounting for depreciation, many of the policy dealing and operating personnel, in several cases, tried to live up to whatever provision Tax Laws did provide for in this regard and they felt the necessity of definitive guidelines in the statutes.

The depreciation principles and polices and their empirical application, as revealed by the study, appear to be in a sort of disarray. The policy dealing personnel appear to have almost completely overlooked the economic aspects of the depreciation policy, such as, "technological development", "asset utilisation intensity", "inflationary effect" etc. The companies Act and the Income-Tax Law, immediately relevant statutes, have not developed any guidelines or parameters for following co-herent and logically consistent policies and practices of accounting for depreciation. The situation is compounded by other elements in the economy of the country: inflation and its adverse effect on capital maintenance, obsolescence from technological explosion and devaluation of "taka", going to the root of external financing for capital development.

Since Bangladesh has a large public sector and a mixed economy, she must need to look at the problems of capital formation on a long-term basis. In so doing, she should devote concerted
attention, for her growing enterprises, to devise a national comprehensive depreciation policy to begin with.

10.3: **Policy Implications**

It is now worthwhile at the end of this exercise to state the policy implications arising from the findings and conclusions set forth above. This part consists of three phases. Phase-I deals with general recommendations on the basis of the total research efforts made in the study. Phase-II addresses itself to a model proposed for calculation of depreciation and Phase-III is devoted to "Directions for future research".

**Phase-I: General Recommendations**

1. The depreciation policy should take into account scientific evaluation of fixed assets' life estimation so that their life is estimated as accurately as possible.

2. The residual or salvage value of fixed assets should be estimated as correctly as possible. And this value should be considered for charging depreciation.

3. The obsolescence of an asset due to innovation or dynamic technological development should be considered for the measurement of depreciation. In anticipation of technological development, the life of a machine should be revised.

4. The rate of depreciation should be in consonance with the actual time for which the asset (especially machine) has
been used.

(5) The adjustment of depreciation with retrospective effect is a "should" for those enterprises which had already made a change-over from one method to another. But the disclosure of change in method along with its impact on the reported results is a "must", even if such change is not adjusted.

(6) The enterprises which, in spite of having outstanding loans against the importation of machinery ignored the effect of devaluation of taka, should give effect to it by (i) increasing the book value of the machinery under a special account called "Plant and Machinery Devaluation Adjustment Account"; (ii) increasing the outstanding loan, and (iii) charging depreciation on the increased book value of the machinery.

(7) To pave the way for sound depreciation policies and practices, the maintenance of a full-fledged fixed assets' register (containing name of the asset, manufacturer's name, year of its manufacture, year of its installation, year of its starting commercial production, estimated useful life specified by the manufacturer, original cost including incoming and installation cost, every year's repairs and maintenance cost thereon, hours not used due to strikes, lockouts and political disturbances, hours not used for mechanical break-down, electricity failure and non-availability of materials etc.) is really important.

(8) The effect of inflation should be given to in depreciation accounting. The Current Cost Accounting approach may be fitted in
the accounting system by crediting or debiting the balance resulting from the discrepancy between the original cost and the replacement cost to the adjustment account—the account for neutralizing profits or losses arising from the changes in the price level. While calculating the value of the asset to the business (that is, deprival value of the asset) in view of giving effect to inflation, the specific price index shall suit the best. But if this index is not available, the general price index (namely, wholesale price index, GNP deflator or cost of living index etc.) may be used. A slightly imperfect system of inflation accounting is better than no system at all.

(9) Any expenditure, though usually not of a capital nature (for instance, repairs and maintenance), if capitalized should be taken into account at the time of computing the current cost of the asset for the purpose of charging depreciation.

(10) The Companies Act should have a mandatory clause providing for charging of depreciation in the light of above guidelines.

(11) The Income-tax Law of Bangladesh should take cognizance of the effect of inflation and should allow, for assessment purposes, the same amount of depreciation as charged in accounts, provided the accounting depreciation has been computed rationally. The fairly increased amount of depreciation charge, if allowed by Tax Law, shall generate the saving of money in the form of a cut in the tax payout, protect capital and foster developmental activities of industries.
(12) The Institute of Chartered Accountants of Bangladesh, considering realities of the day, should come forward with a pronouncement for the uniform accounting treatment of depreciation, taking into consideration the nature of industry and assets, throughout the country.

(13) Bangladesh Bank and Bangladesh Bureau of Statistics should play an important role by regularly publishing the current price indices of fixed assets.

(14) A system of depreciation accounting should be evolved which can play its part in ensuring the realistic picture of cost and result after considering the impact of inflation on the assets. This leads to evolve the following model for calculating depreciation.

Phase-II: A Proposed Model for Depreciation Calculation

Methods used for calculating depreciation of a fixed asset are mainly based on the consideration of original cost of the asset, its working life and its salvage or residual value. Now-a-days, due to inflation the replacement cost of an asset is usually much more than its original cost. There may be periodic capitalised expenditure with a view to increasing the working and earning capacity of the asset. In addition, there may occur periodic devaluation of taka which increases the value of outstanding loan raised for purchase of plant and machinery from foreign countries. Consequently, this devaluation increases the cost of such plant
and machinery. A realistic approach to depreciation calculation should not ignore the effect of inflation, capitalised expenditure, if any, on the asset, devaluation of currency during its useful life and salvage value of the asset at the end of its working life. Besides these factors, there may sometimes crop up complications because of new inventions and technological developments. The original estimated life of the asset may have to be re-estimated at the end of each accounting year so as to allow for its probable obsolescence, which is also an important point to be taken into consideration. The models available for calculation of depreciation do not take into account all these factors.

These models are the algebraic versions\(^1\) of straight-line, reducing-balance, sinking fund, annuity, asset revaluation, discounted present value methods and the like.

Here a new model for depreciation calculation is being proposed. This model takes into account the effects of inflation

capitalised expenditure, devaluation of currency, re-estimated useful life expectancy and salvage value. A general equation for depreciation calculation has been derived using an index "t" which represents the t th year of use of the asset. Putting t = 1, 2, 3 etc. years, one can find the amount of depreciation for each year.

In this model, the written-down value of the asset at the beginning of a particular year is re-appraised for inflation during the year and its further useful life is also re-estimated taking into account the actual use of the asset and other factors. The amount of depreciation is calculated on the basis of this re-appraised written-down value and the fraction of its expected working life for which it has been used during the year. The written-down value of the asset at the end of the year is calculated from its re-appraised value by deducting depreciation and adding capitalised expenditure during the year.

The following notations have been used in the model:

\[ R_t = \text{Re-appraised value of the asset during } t \text{ th year including the effects of inflation and devaluation of taka, if any;} \]

\[ W_t = \text{Written-down value of the asset at the end of } t \text{ th year after depreciation. This value includes the effect of inflation and any capitalised expenditure;} \]

\[ I_t = \text{Co-efficient of inflation in the value of asset for the } t \text{ th year;} \]
\[ I_t' = \text{Co-efficient of inflation of the salvage or scrap value for the } t\text{th year}; \]

\[ D_t = \text{Depreciation for the } t\text{th year}; \]

\[ S_t = \text{Salvage or residual value, if any, at the end of } t\text{th year}; \]

The salvage value has to be re-estimated every year taking into account the effect of inflation in the value of scrap during the year;

\[ P_t = \text{Period of time for which the asset is used during the } t\text{th year}; \]

\[ L_t = \text{Effective life remaining at the beginning of the } t\text{th year}; \]

\[ C_t = \text{Capitalised expenditure, if any, during the } t\text{th year}; \]

\[ r_t = \text{Conversion rate of dollar to taka in the } t\text{th year}; \]

\[ r_0 = \text{Conversion rate of dollar to taka when the asset was originally purchased.} \]

In this connection, it is worth noting that \( W_{t-1} \) represents the written-down value at the end of \( t-1\)th year and, therefore, the written-down value of the asset at the beginning of the \( t\)th year. Hence, \( W_0 \) represents the original cost of the asset.

The following general equations represent the model proposed for re-appraising the asset, calculating the amount of depreciation and the written-down value of the asset:

\[ R_t = W_{t-1}(1 + I_t) \frac{r_t}{r_0} \quad \ldots \quad (1) \]
The use of the proposed equations as given above has been illustrated by the following example:

A continuous chemical plant bought on loan from the U.S.A. was installed in, say, Karnaphuli Rayon Chemicals Ltd., Chittagong, Bangladesh at a cost of Taka 10,00,000. The estimated life of the plant was 10 years. The rate of inflation was 5 per cent for the first two years, 8 per cent for the third and fourth years and 10 per cent for the rest of its life. At the end of the fourth year it was reported in the literature that an alternative improved process had been found and new plants using the new process would be available in 2 to 3 years. So, taking into account the obsolescence of the running plant, its originally estimated useful life was reduced by 2 years at the end of 4th year. It may further be noted here that in the sixth year 'taka' was devalued and the new conversion rate of taka to dollar was raised to taka 22 per dollar from taka 20 per dollar. What would be the amount of depreciation at the end of sixth year, if capitalised expenditure per year on the plant was 10 per cent of its original cost from the third year onwards? It may again be noted that during the third year the plant was shut down for six months. Therefore, this period of time, that is, half a year is to be added to its remaining useful life. Salvage value of

\[
S_t = S_{t-1}(1 + I_t) \quad \text{(2)}
\]

\[
D_t = \frac{(R_t - S_t)P_t}{L_t} \quad \text{(3)}
\]

\[
W_t = R_t - D_t + C_t \quad \text{(4)}
\]
the plant was originally estimated at TK. 50,000 and the rate of inflation for the value of scrap can be uniformly taken as 3 per cent per annum.

\[ W_{t-1} \]

**First year**

\[ t = 1, \text{i.e.,} W_0 = \text{TK. 10,000,000}; \ S_{t-1} = S_0 = \text{TK. 50,000}. \]

\[ I_t = I_1 = \% = 0.05; \ I'_t = I'_1 = \% = 0.05; \ P_t = P_1 = 1 \text{ year}; \]

\[ L_t = L_1 = 10 \text{ years}; \ C_t = C_1 = 0; \ r_t = r_0 = 1120; \]

\[ R_t = W_{t-1} \frac{(1+I_t)}{r_t} \frac{r_t}{r_0} = R_1 \]

\[ = 10,000,000 (1 + 0.05) \frac{20}{20} = 10,000,000 (1 + 0.05) \times 1 \]

\[ = \text{TK. 10,50,000} \]

\[ S_t = S_1 = S_{1-1} (1 + I'_t) = S_0 (1 + 0.03) = 50,000(1 + 0.03) = \text{TK. 51,500}. \]

\[ D_t = \frac{(R_t - S_t)}{L_t} \text{ or } D_1 = (10,50,000 - 51,500) \times 1 = \text{TK. 99,850} \]

\[ W_t = R_t - D_t + C_t \text{ i.e., } W_1 = R_1 - D_1 + C_1 = 10,50,000 - 99,850 + 0 \]

\[ = \text{TK. 9,50,150} \]

**Second Year**

\[ I_t = I_2 = \% = 0.05; \ I'_t = I'_2 = \% = 0.03; \]

\[ P_t = P_2 = 1 \text{ year}; \ L_t = L_2 = 9 \text{ years}; \ r_t = r_0 = 1120. \]

\[ R_t = W_{t-1} \frac{(1+I_t)}{r_t} \frac{r_t}{r_0} \text{ i.e.; } R_2 = W_{2-1} (1 + 0.05) \frac{20}{20} \]

\[ = W_1 (1 + 0.05) \times 1 = 9,50,150 (1 + 0.05) \times 1 = \text{TK. 9,97,697.50} \]

\[ S_t = S_2 = S_{2-1} (1 + I'_t) = S_1 (1 + 0.03) = 51,500(1 + 0.03) = \text{TK. 53,045}. \]

\[ D_t = \frac{(R_t - S_t)}{L_t} \text{ i.e., } D_2 = \frac{(R_2 - S_2)}{L_2} = \frac{(9,97,697.50 - 53,045)}{9} \]

\[ = \text{TK. 1,04,956.94}. \]
\[ W_t = R_t - D_t + C_t; \text{ i.e., } W_2 = R_2 - D_2 + C_2 \]
\[ = 9,97,657.50 - 1,04,956.94 + 0 = \text{TK. } 8,92,700.56. \]

**Third year**

\[ I_t = I_3 = 8\% = 0.08; \text{ i.e., } I'_t = I'_3 = 3\% = 0.03; P_t = P_3 = 6 \text{ months} \]
\[ = 0.5 \text{ year}; \]

\[ L_t = L_3 = 8 \text{ years}; C_t = C_3 = \text{TK. } 1,00,000; \]

\[ r_t = r_0 = 11.20. \]

\[ R_t = \frac{W_{t-1} (1+I_t)}{r_0} \text{ i.e., } R_3 = \frac{W_2 (1+0.08)}{20/00} = \frac{W_2 (1+0.08)}{1} = \text{TK. } 9,64,116.60. \]

\[ S_t = S_3 = S_{3-1} (1+I'_t) = S_{3-1} (1+I'_3) = S_2 (1+0.03) = 53,045(1+0.03) \]
\[ = \text{TK. } 54,636.35. \]

\[ D_t = \frac{(R_t - S_t)P_t}{L_t} = D_3 = \frac{(R_3 - S_3)P_3}{L_3} \]
\[ = \frac{(9,64,116.60 - 54,636.35)}{0.5} = \text{TK. } 56,842.52 \]

\[ W_t = R_t - D_t + C_t; \text{ i.e., } W_3 = R_3 - D_3 + C_3 \]
\[ = 9,64,116.60 - 56,842.52 + 1,00,000 \]
\[ = \text{TK. } 10,07,274.08 \]
Fourth year

\[ I_t = I_4 = 8\% = 0.08; \quad I'_t = I'_4 = 3\% = 0.03; \]

\[ P_t = P_4 = 1 \text{ year}; \quad L_t = L_4 = 7.5 \text{ years ( } L_4 \text{ is 7.5 years} \]

instead of 7 years as the plant was not used for 0.5 year during the 3rd year)

\[ C_t = C_4 = TK. 1,00,000; \quad r_t = r_0 = 1:20. \]

\[ R_t = \frac{W_t}{t-1} \left( 1+I_t \right) \frac{r_t}{r_0} \text{ i.e., } R_4 = \frac{W_4}{4-1} \left( 1+I_4 \right) \frac{r_4}{r_0} \text{ i.e.,} \]

\[ W_2 \left( 1 + 0.08 \right) 20/20 = 10,07,274.08 \left( 1+0.08 \right) \times 1 = TK. 10,87,856.01 \]

\[ S_t = S_4 = S_{4-1} \left( 1+I'_t \right) = S_{4-1} \left( 1+I'_4 \right) = S_3 \left( 1+0.03 \right) = 54,636.35 \left( 1+0.03 \right) \]

\[ TK. 56,275.44 \]

\[ D_t = \frac{\left( R_t - S_t \right) P_t}{L_t} = D_4 = \frac{\left( R_4 - S_4 \right) P_4}{L_4} \]

\[ = \frac{\left( 10,87,856.01 - 56,275.44 \right) 1}{7.5} = TK. 1,37,544.08 \]

\[ W_t = R_t - D_t + C_t \text{ i.e., } W_4 = R_4 - D_4 + C_4 \]

\[ = 10,87,856.01 + 1,37,544.08 + 1,00,000 = TK. 10,50,311.93 \]

Fifth year

\[ I_t = I_5 = 10\% = 0.10; \quad I'_t = I'_5 = 3\% = 0.03; \]

\[ P_t = P_5 = 1 \text{ year}; \quad L_t = L_5 = 6.5 - 2 = 4.5 \text{ years ( Since 2 years have been reduced from the original estimate because of invention of alternative improved process).} \]
\[ C_t = C_5 = \text{TK. 1,00,000}; \quad r_t = r_6 = 1:20. \]

\[ R_t = \frac{w_{t-1}}{r_t/r_0} (1+I_t) \quad \text{i.e., } \quad R_5 = \frac{W_{5-1}}{r_5/r_0} (1+I_5) = \frac{W_5(1+0.10)20/20}{10,50,311.93 (1 +0.10)x1} = \text{TK. 11,55,343.12}. \]

\[ S_t = S_5 = S_{5-1} (1+I'_t) = S_{5-1}(1+I'_5) = S_4 (1 +0.03) \]

\[ = 56,275.44 (1 + 0.03) = \text{TK. 57,963.70}. \]

\[ D_t = \frac{(R_t - S_t)P_t}{L_t} \quad \text{i.e., } \quad D_5 = \frac{(R_5 - S_5)P_5}{L_5} \]

\[ = \frac{(11,55,343.12 - 57,963.70) x 1}{4,5} = \text{TK. 2,43,862.09} \]

\[ W_t = R_t - D_t + C_t; \quad \text{i.e., } \quad W_5 = R_5 - D_5 + C_5 \]

\[ = 11,55,343.12 - 2,43,862.09 + 1,00,000 = \text{TK. 10,11,481.03}. \]

**Sixth year**

\[ I_t = I_6 = 10\% = 0.10; \quad I'_t = I'_6 = 3\% = 0.03; \]

\[ P_t = P_6 = 1 \text{ year}; \quad L_t = L_6 = 3.5 \text{ years}; \]

\[ C_t = C_6 = \text{TK. 1,00,000}; \quad r_t = 1:22; \quad r_0 = 1:20. \]

\[ R_t = \frac{w_{t-1}}{r_t/r_0} (1+I_t) \quad \text{i.e., } \quad R_6 = \frac{W_{6-1}(1+I_6)}{r_6/r_0} \]

\[ = \frac{W_5(1+I_6)r_6/r_0}{10,11,481.03 (1+0.10)22/20} = \text{TK. 12,23,892.05} \]

\[ S_t = S_6 = S_{6-1} (1+I'_t) = S_{6-1}(1+I'_6) = S_5 (1 + 0.03) \]

\[ = 57,963.70 (1 + 0.03) = \text{TK. 59,702.61} \]

\[ D_t = \frac{(R_t - S_t)P_t}{L_t} \quad \text{i.e., } \quad D_6 = \frac{(R_6 - S_6)P_6}{L_6} \]

\[ = \frac{(12,23,892.05 - 59,702.61) x 1}{3.5} = \text{TK. 3,32,625.55} \]
\[ W_t = R_t - D_t + C_t \quad \text{i.e.,} \quad W_6 = R_6 - D_6 + C_6 \]

\[ = 12,25,892.05 - 3,32,625.55 + 1,00,000 = \text{TK.} \, 9,91,266.50 \]

From the above calculations one can find:

- Depreciation in the 1st year = \text{TK.} \, 99,850
- Depreciation in the 2nd year = \text{TK.} \, 1,04,956.94
- Depreciation in the 3rd year = \text{TK.} \, 56,842.52
  (The plant was shut down for six months in the third year)
- Depreciation in the 4th year = \text{TK.} \, 1,37,544.08
- Depreciation in the 5th year = \text{TK.} \, 2,45,862.09
- Depreciation in the 6th year = \text{TK.} \, 3,32,625.55

\[ \text{Total} \quad \text{TK.} \, 9,75,681.18 \]

Thus, it is found that the total amount of depreciation for the first six years according to the present model is \text{TK.} \, 9,75,681.18. If straight-line method were used, the total amount of depreciation would have been \((10,00,000-50,000) \times \frac{6}{10} = \text{TK.} \, 5,70,000\) for the first six years.

The written-down value of the plant by the straight-line method would be \text{TK.} \, 10,00,000 - \text{TK.} \, 5,70,000 = \text{TK.} \, 4,30,000, whereas according to the proposed model, this is \text{TK.} \, 9,91,266.50 which is much higher because of the effects of inflation, devaluation of taka and capitalised expenditure on the plant. The effect of inflation on salvage or residual value has also been properly
considered in depreciation calculation. The proposed model can accommodate any change in economic environment, whether it is an inflation or a deflation. This model can also accommodate both increase or decrease in the value of taka in terms of the value of foreign currency and it reflects all such changes properly in depreciation calculation and thereby portrays a more realistic picture of measurement of cost of production and consequential profit or loss.

Finally, it can be said that this model works well if the asset is bought either wholly on loan or wholly for cash. In the latter case, of course, from the given equation: \( R_t = W_{t-1}(1+I_t) \)
\( \frac{r_t}{r_0} \), the factor \( \frac{r_t}{r_0} \) has to be deleted. This model can be used even if the asset be bought partly on loan and partly for cash. But in this case, it has to be applied to cash component and loan component\(^2\) separately. In case of cash component, the factor \( \frac{r_t}{r_0} \) (which has been used in the model for devaluation of currency) is to be dropped in the same way as has been suggested in the above case if the asset be bought wholly for cash. In this connection, there is another school of thought which regards increased loan due to devaluation as a financial charge, instead of considering it to be an enhancement of the cost of the asset acquired on loan.\(^3\) The researcher, however, does not feel inclined to accept this view.

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\(^2\)The loan component signifies the amount of loan outstanding just before devaluation.

because if the additional loan burden consequent upon the devaluation of currency can appropriately be charged against revenue as a financial charge, there is no need to consider the effect of inflation in accounting. And basing on this reason, the proposed model does not subscribe to the above viewpoint. In the model, it has been assumed that the increased value of loan in terms of taka due to devaluation increases the cost of the asset. Again, there are some constraints in the application of this model. It is not an easy task to ascertain the current cost of a fixed asset (like machine) considering the exact effect of inflation, the salvage value, the period for which the asset is used and the effective life remaining, particularly in view of the possible dynamic technological changes. However, in spite of these limitations, one can, hopefully, use this model to have a reasonably accurate estimate of depreciation.

**Phase-III: Directions for future research**

For those interested in applied research, there is ample opportunity for further work to provide data in the context of economic development. Generally speaking, the research would be to provide building blocks for further sophistication of the theory of depreciation accounting and for formulating a national policy on depreciation of fixed assets, so that in industrializing, the country does not inadvertently begin consuming capital.

More specifically, again following from this study, the promising areas of future research may be stated as follows:
(1) There is a dire need for building models for estimating the useful life and the salvage or residual value of fixed assets (particularly, machinery) for the purpose of calculating depreciation on a logical and fair basis.

(2) A similar study may be replicated in the industries of Bangladesh not covered by this thesis.

(3) Other interesting fields of research may include critical studies on (a) depreciation methods used in different industries, (b) tax depreciation accounting, (c) depreciation as instrumental to economic growth and development, (d) depreciation as a device of financial management and (e) depreciation and inflation accounting.

In fine, the industrial enterprises of Bangladesh promise challenge to future researchers. Patient and pedestrian efforts are bound to be rewarding. The cause of accelerated development of the industrial edifice of the Bangladesh economy demands it.