CHAPTER I

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1.1: Prolegomena

Everything on earth must undergo formation or growth on the one hand and decay on the other. This is the inevitable law of nature which has found expression in different areas of human knowledge. William Shakespeare was not far from truth when he expressed his sentiment regarding the lessening in value and dissolution of earthly things in the following inimitable lines:

The cloud-capp'd towers, the gorgeous palaces,
the solemn temples, the great Globe itself,
Yea, all which it inherit, shall dissolve,
And, like this insubstantial pageant fades,
Leave not a rack behind.

The sentiment expressed above represents the perspective from which the problem of depreciation may well be approached. The International Congress on Accounting is also firmly of the view that even if one may not normally subscribe to the poet's profound utterance on depreciation at least in case of land, it would, nevertheless, be well if there were more general recognition of his views on the inevitability of decay in other forms of material assets—without perhaps going, as far as he does, in denying to them even a scrap value. Land is not


considered depreciable by accountants because, unlike other material assets, it is usually not brought to a 'scrap' for which its retirement from use might be inevitable. "All machinery", says Hatfield, "is on an irresistible march to the junk heap, and its progress, while it may be delayed, cannot be prevented by repairs." This may be said virtually of any productive asset, save land. One day the costs of repairs and renewals do exceed the benefits derived from the material asset and it is, accordingly, brought to a 'scrap'. The asset that is fresh and new today will, five, ten, fifteen, twenty, thirty or fifty years hence go out of use and be discarded or sold for what it brings. That is, it is discarded as a "scrap". But a 'scrap' does not mean a 'junk'. A going machine (say, an old motor car) discarded as a 'scrap' by one concern may be gainfully used by another. What is important is that one day a machine has to be got rid of owing to its depreciation which may be caused either by 'use', 'wear and tear', 'action of elements' or simply 'passage of time' which are internal causes or by 'obsolescence' and 'supersession' which are external causes. This being so, it is clear that the cost of each such capital asset (less whatever salvage value may be realized upon its disposal) is a proper charge against the revenues of the periods in which

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it has been in use.\(^5\)

Depreciation as an accounting device has been much talked of and criticized. No end of such talks and criticism has yet been reached.\(^6\) Stated another way, a plethora of theoretical discussions on depreciation has emerged and piled up in the literature of accounting and finance. Scholastic discourses on it and its various aspects are not quite insufficient. Nevertheless, depreciation accounting continues to be probably the most discussed and most disputatious topic in accounting literature\(^7\) and in view of at least one critic, is a "disgrace to the accounting profession".\(^8\) Even among those who do not feel so strongly about it, dissatisfaction with depreciation accounting is widespread.\(^9\) The words of Adolph Matz also befit this context: "The subject of depreciation has brought forth a great deal of discussion in accounting literature. Yet, differences of opinion regarding depreciation accounting continue to exist."\(^10\) Evidently, depreciation, though a much

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\(^5\)See discussion in CICA (Canadian Institute of Chartered Accountants) Research Recommendations on "Fixed Assets and Depreciation", (December 1968), Section 3060, p.87.


discussed subject, is still an important area for research study. And this might have been the reason why Jan R. Williams observed: "the area of depreciation and replacement cost is a very relevant one at this time. It is certainly an area in which additional work is warranted in the U.S. and I would assume the same is true in your country."  

1.2 Genesis of the study

All depreciable fixed assets devoted to business purposes eventually wear out or become obsolete. In popular parlance, depreciation, as has been observed earlier is a gradual deterioration in the physical condition or a loss or shrinkage in the utility value of an asset as a consequence of such deterioration or even through mere ageing of the asset. In accounting, depreciation designates the expiration of 'the cost or value' of fixed assets and it should not be confused with the purely physical processes of decay, deterioration etc., although physical changes may be either wholly or partly responsible for economic extinguishment.

In the opinion of the Australian Society of Accountants and The Institute of Chartered Accountants in Australia; "depreciation describes the accounting process by which the using up or loss of


12 A private communication dated July 6, 1978 written by Dr Jan R. Williams, Professor of Accounting and Business Law, University of Tennessee, U.S.A. to the researcher (See in appendix C).

the service potential of depreciable assets is progressively brought into account by means of periodic charges against revenue."^{14}

The Institute of Chartered Accountants in England and Wales takes a similar view. The Institute asserts^{15}

Depreciation represents that part of the cost of a fixed asset to its owner which is not recoverable when the asset is finally put out of use by him. Provision against this loss of capital is an integral cost of conducting the business during the effective commercial life of the asset and is not dependent upon the amount of profit earned.

The American Institute of Certified Public Accountants' view^{16} may also be noted. Depreciation accounting is:

a system of accounting which aims to distribute the cost or other basic value of tangible capital assets, less salvage value (if any), over the estimated useful life of the unit (which may be a group of assets) in a systematic and rational manner. It is a process of allocation, not of valuation. Depreciation for the year

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is the proportion of the total charge under such a
system that is allocated to the year. Although the
allocation may properly take into account occurrences
during the year, it is not intended to be a measurement
of the effect of all such occurrences.

International Accounting Standards Committee fully subscribes
to the above view. 17

Interestingly, these views explicitly inject the concept
of 'life-cycle' of concerned assets in the investment cost recovery
process. Emphasising historical cost dimension, it describes
depreciation accounting as allocation process – albeit discre-
tionary to the practitioners. It appears that they do not go into
the complexities of 'valuation' that may arise in the sequel.

To turn to another body of experts – The American Accounting
Association (AAA) 18:

Any decline in the service potential of plant and other
long-term assets should be recognized in the accounts
in the periods in which such decline occurs ... The
Service potential of assets may decline because of ...
gradual or abrupt physical deterioration, consumption
of service potential through use even though no physical
change is apparent, or economic deterioration because
of obsolescence or a change in consumer demand.

17 International Accounting Standard 4 on "Depreciation
Accounting", International Accounting Standards Committee,

18 The Committee on Concepts and Standards of the American
Accounting Association, Accounting and Reporting Standards for
Corporate Financial Statements and Preceding Statements and
Supplements (Columbus, Ohio: American Accounting Association,
Clearly, unlike those of the others mentioned earlier, 'valuation' here constitutes the focus. As Hendriksen observes that the AAA's "definition of depreciation leads to the same conclusion as the AICPA's definition", but the AAA's definition "is based on a measure of asset valuation (the service potential) rather than merely on an allocation of cost." 19 Here, valuation is seen from two different standpoints: (1) decline in service potential due to use and other reasons and (2) economic deterioration because of changes in the market value of investment via obsolescence and shifts in consumer demand for products/services that the investment might produce.

The statement of Standard Accounting Practice (SSAP) 12 of The Institute of Chartered Accountants of Scotland 20 gives importance to both 'allocation of cost' and 'valuation' aspects:

Depreciation is a measure of the wearing out, consumption or other loss of value of a fixed asset whether arising from use, effusion of time or obsolescence through technology and market changes. Depreciation should be allocated to accounting periods so as to charge a fair proportion to each accounting period during the expected useful life of the asset.

The said Statement (that is, SSAP 12) further states that "where there is a revision of the estimated useful life of an asset, the unamortised cost should be charged over the revised


20 Statement of Standard Accounting Practice (SSAP) 12 on "Accounting for Depreciation", The Institute of Chartered Accountants of Scotland (January 1978), Paragraph 81 and 15.
remaining useful life”\textsuperscript{21}. Clearly, the revaluation of an asset, revision of its estimated useful life and change in demand for its output have been simultaneously underscored by the above Statement.

From the study of the above definitions, three different views may emerge:

First, all the professional accounting bodies save American Accounting Association and The Institute of Chartered Accountants of Scotland consider depreciation a function of cost rather than anything else. They regard it as a systematic process of cost allocation over relevant accounting periods.

Secondly, American Accounting Association is unique in viewing depreciation as a value adjustment process, recognising value erosion in various ways.

Thirdly, there is the composite view of The Institute of Chartered Accountants of Scotland dealing with 'allocation of cost', 'valuation', 'residual/salvage value' and 'revision of estimated useful life' — all at the same time.

To now briefly review how individual experts view depreciation and its implementation in accounting process.

G.D.Roy\textsuperscript{22} states thus:

There is no doubt that it is 'allocation'. But one cannot, possibly, say categorically that it is not

\textsuperscript{21}\textit{Ibid.}, Paragraph 17.
valuation or has absolutely no relation to it. It
seems that it is both. Atleast one cannot deny that
historical cost, may be for a particular moment in
the past ... is, after all, a type of value ... What
have been stated to be allocations, are fixed by
various methods. Therefore, it may so happen that
historical cost less a portion of it, allocated as
depreciation to a particular period, equals the
value of the asset on a particular basis less
depreciation liable to be written off on that basis.

G.D.Roy, therefore, feels that depreciation is a process
of both 'allocation' and 'valuation'. He considers historical cost,
may be for a particular moment in the past, a type of value. But
his interpretation may also be disputed for Anthony and Reece\(^{23}\)
have cogently argued:

Depreciation expense does not represent the shrinkage
in real value during an accounting period; physically,
the machine may be as useful and as valuable at the
dead of the period as it was at the beginning. Neither
does the net book value represent the market value of
the assets on hand. Depreciation expense is a write-
off of a portion of the cost of the asset, and it
follows that the net book value of fixed assets reported
on the balancesheet represents only that portion of the
original cost of the fixed asset which has not yet been
charged to expense.

Upto now discussion on the different concepts of depreciation
continued. Evidently, there is no unanimity of views. The
diversity of viewpoints, as presented in the foregoing, brings up
the questions: how about actual practice? To put it more clearly,
how does a business man implement such a complex concept in oper-
ational process? The questions are important as this study may
deal with depreciation principles, policies and practices of the
industrial concerns in Bangladesh.

\(^{23}\)Robert N.Anthony and James S.Reece, Management Accounting —
Text and Cases (First Indian ed.; Bombay: D.B. Taraporevala Sons
and Co., Private Ltd. by arrangement with Richard D.Irwin, Inc.,
The issue of depreciation is very relevant and important because whether under legal compulsion, professional guidance or customery practice, it is an integral part of accounting and financial reporting. A number of methods have been developed to provide for depreciation. These are: straight-line, reducing or declining-balance, double-declining balance, sum-of-the-years-digits, depreciation fund, insurance policy, annuity, units-of-production or service, revaluation etc. By using any of these methods, depreciation can be charged in the final accounts to ensure that the prepayments made for the acquisition of fixed assets have been duly reflected in the cost of production against sales. Again, the diversity in the methods of providing for depreciation is evident. Why so?

This raises a few basic questions: how to ascertain the appropriate amount of depreciation annually and for the relevant period as a whole? Also is it dependent upon the working (or service) life of the asset? Then, how is that life to be determined? Conventionally, the working (or useful) life of a fixed asset is a matter of human judgement and to some extent, of policy upon which no general rule can be laid. In actual practice, it is essentially based on a forecast and/or informed judgement. The factors which usually influence the determination of useful life


of a fixed asset are past experience with similar assets, manufacturers' or suppliers' specification, pattern of use of the asset, susceptibility to obsolescence, engineering estimates, Tax Codes, legal or other limits on the use of the asset etc. Again, the services derived from an asset may not be uniform in different years and as such, it may not be proper to charge depreciation uniformly under straight-line method. And, obviously other methods also raise ticklish questions. For example, in case of reducing-balance method, questions may be:

1. Does the workable capacity of a fixed asset really diminish in a geometric progression?
2. Can it be said with exactitude that

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29. Ibid.

30. Ibid., p.76.


32. Legal or other limits on the use of an asset imply that after the expiry date of the related lease is over, the useful life of the lease-hold asset comes to an end. See International Accounting Standard 4, Paragraphs 6 and 15.

the lives of fixed assets follow the Gompertz law. Is it not justified to apply the later modification of the said law, that is, Makeham's law? Is it not a fact that there is always a chance of the machinery becoming obsolete? Is not this chance more or less constant? How deal with them?

In the realm of depreciation accounting, yet another intriguing question is: Why provide for depreciation of a fixed asset at all? Is it for fair measurement of cost or is it for its replacement financing?

Until the rapid inflationary process and changing technologies became order of the day, neither the theoreticians nor the practising industrial concerns drew any significant distinction between the two issues. It appears that they underscored the first and assumed, the second would be automatically met.

In this context, Paton's comment deserves particular attention:

There is a common tendency — from which accountants are not exempt — to confuse depreciation accounting and the financing of replacements. The essential purpose of recognizing depreciation, so many seem to think, is to accumulate funds to provide for the renewal of plant assets .... In view of this situation it needs to be emphasized, first, that depreciation

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34 Gompertz law is a 'law of mortality' for the construction of the mortality/life table of human beings. This is a contribution made by Gompertz, an English actuary in 1825.

35 Makeham's law is the modification of Gompertz law. Makeham contributed this law in 1860. See Alistair Neill, Life Contingencies (London: Heinemann, 1977), p.28. For further discussion, see Part-B of chapter IV in the relevant sections: Introducing The Makeham's Law.

does not differ, fundamentally, from any other class of operating charge . . . . As a matter of fact, depreciation represents the extreme example of prepayment. Expenditures for labour and materials are made on a day-to-day, month-to-month basis; the cost of plant is incurred in advance for years at a stretch. Let no one be misled on this point. The cost of plant is an actual cost, and by the same token depreciation is a thoroughly valid operating charge.

Paton's quote deserves a word of comment. He clearly draws a distinction between the two issues — 'depreciation accounting' and 'financing'. He warns lest these two issues should be mixed up. Incidentally, it is interesting that he equates depreciation (which he regards as a prepayment for the acquisition of fixed assets) with all other operating charges.

In providing for depreciation in practice, therefore, yet another issue comes up: does provision for depreciation assure source of funds and/or working capital? This will also be the focus of this study. The reason is clear while traditional accounting practice has, until recently, taken the answer to be in the affirmative, of late dissenting views are being heard. It is, therefore, appropriate that this study should try to examine this issue in the context of the depreciation policy and practice of industrial environment of Bangladesh.

Robert Anthony considers that it is a misconception to view depreciation as source of funds or as augmentation of working capital.\(^{37}\)

Relevantly, one may quote from the Research Report of
the U.S. National Association of Accountants (NAA)\(^38\)

The process of accounting for depreciation is designed
to facilitate this recovery of capital through sales
revenues. Since depreciation must be recognized as a
cost in the income statement, it necessarily reduces
net income and provides a means for retaining in the
business funds which might otherwise be paid out. Sales
revenues must, of course, be adequate to cover all
costs including depreciation, otherwise, depreciation
charges cannot be effective as a source of funds. ... 
The two aspects are, of course, complementary parts
of the whole purpose served by accounting for
depreciation.

While the aspects of 'recovery' and 'source of funds' are
considered complementary, assurance of complete identity is not.

It may be a matter of interest to know how this problem is
looked at in a socialist country. In the U.S.S.R., as Robert
W. Campbell\(^39\) reports that depreciation deductions are very much

\(^{38}\) National Association of Accountants, New York, Research
Series No. 33 (April 1958), pp. 52-53. The identical view is held by
Private Limited, 1977), pp. 46-47, passim; another author also
supports this view by stating that although depreciation is not
primarily a method of providing funds for replacement purposes,
yet it may do this indirectly by reducing the profits available
for distribution. He is, further, of the view that the purposes
of charging depreciation are both of 'allocation of cost' and
'recovery of capital for providing funds'. See Patrick R. A.
Kirkman, Accounting Under Inflationary Conditions (London:
also see Md. Yusuf Talukdar, "Accounting for Inflation - An
(December 1979), p. 31. This author states that the primary importance
of depreciation accounting may be ascribed to the dual effect on
both income measurements and capital recovery process; also see
W. J. Graham, "Depreciation and Capital Replacement in an Inflationary
He subscribes to the above view by stating that depreciation tends
to recover capital and provide funds.

\(^{39}\) Robert W. Campbell, Accounting in Soviet Planning and
Management (Cambridge, Massachusetts: Harvard University Press,
1963), pp. 50-53, passim.
similar to the depreciation charges in the accounting of capitalistic countries but differ in that they (depreciation charges) involve two components: a charge intended to recover the value of an asset over its useful life and a charge to accumulate resources for intermittent major repair of the asset—popularly known as "capital repairs." In the U.S.S.R., depreciation deductions are considered an important source of funds for an enterprise. Depreciation deductions earmarked for capital repairs are held in a special account at the State Bank and are used to replace or renew fixed assets when they go out of use. In fact, fund may be automatically provided from the said account by the Government of the U.S.S.R. for the purpose of replacement.

In the foregoing pages a few current basic issues in providing for depreciation have been briefly examined. They are hard policy decisions in the business environment of the present times. This constitutes a challenge to business operating within the framework of traditional practice of depreciation accounting, particularly in the era of increasing inflation and unpredictable situation. How is the issue being faced:

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40 Typical examples of capital repair include overhauling a motor vehicle or locomotive, replacing the roof of a building, or rebuilding a machine," see ibid., p.78.

The accountants have debated the relative merits of Current Value Accounting Versus Acquisition/Historical Cost Accounting since at least 1880. In the face of challenge, this debate seems to be whether Current Value Accounting can be or should be adopted either to supplement or supplant Acquisition Cost Accounting.\(^4^2\) Also, proposals for the development of inflation accounting have been made in many a country. Current replacement cost proposals of Sandilands and the Philips system may be mentioned. Another response has been the disclosure requirements of the U.S. Securities and Exchange Commission’s Accounting Series Release (ASR) 190. These three focus on replacement cost measures of existing physical capacity,\(^4^3\) either by disclosure and/or by an innovative new accounting system, such as, accounting for price level changes. In this connection, the proposal of stating assets at the value of future services expected to be obtained from such assets is also important. The concern is somehow to bring current replacement cost or market value to the forefront.\(^4^4\) These approaches, of course, introduce additional


\(^{4^5}\) Ibid.
complications. Yet, the need for a substitute of or supplement to historical cost accounting is being increasingly felt. The aforesaid approaches are, however, based on historical cost accounting primarily; but, in addition, they offer supplemental provision for depreciation, keeping in view the market value or replacement cost.

In the U.S.S.R. also accountants and economists have recognized the desirability of basing depreciation charges on the replacement cost. L.M. Kantor, 'one of the most competent Soviet authorities on accounting' thinks that "the method of valuation of fixed assets at replacement value is in principle the very best and current method".\(^\text{46}\)

Since this study is confined to the policies and practices of depreciation accounting in Bangladesh, it is interesting to briefly mention about the environment of Bangladesh. It appears that the present depreciation practices in Bangladesh present a very dismal picture.\(^\text{47}\) The Companies Act, 1913 governing the companies in Bangladesh does not specify any legal requirement to provide for depreciation on fixed assets. There is, of course, only one provision in section 132(3) of the Act that the profit and loss account shall include, inter alia, the total amount written off for depreciation.\(^\text{48}\) The Act thus recognizes depreciation


\(^{48}\)Ibid.
as a charge against profit, but it does not, unlike the Indian Companies Act, make the charging of depreciation mandatory. The Companies Act recommends neither any method nor any basis to be used for computing periodic depreciation. Nor is any principle of depreciation accounting laid down in the Act. All matters relating to depreciation accounting are wholly placed at the discretion of the companies. And Bangladesh Jute Mills Corporation (BJMC), presiding over the public sector jute mills, issued the June 30, 1974 directive which reads: "Depreciation should not be charged in the accounts for the year ended June 30, 1974 but this amount should be shown at the bottom of the accounts and must be claimed while submitting Income-tax return."

Accordingly, none of the public sector jute mills of Bangladesh charged depreciation for the year ended June 30, 1974. And most of the auditors for those jute mills for that year submitted a qualified report. Indeed, in Bangladesh, different industries follow different methods of charging depreciation according to their own discretion and this obviously poses the problem of inter-

49 The Indian Companies Act went a long way in this direction by inserting section 205, according to which depreciation must be provided for on fixed assets before dividend is declared.


51 A Chartered Accountant, ibid.

52 Ibid.
industry comparisons.\textsuperscript{53}

The rates of depreciation used by industrial concerns for accounting purposes are different from tax depreciation rates.\textsuperscript{54} Fragmentary applications of inflation accounting have been made by a handful of private companies of Bangladesh. Mention may be made of manufacturing companies like Bangladesh Lamps Limited and Bangladesh Electrical Industries (Pvt.) Ltd., which use replacement cost approach for charging depreciation. In the non-manufacturing sector, Philips (Bangladesh) Limited is the only marketing organisation which has long been charging depreciation on replacement cost.

To sum up this background study: depreciation accounting is full of complexity, both at the level of theory and at the level of practice. The inflationary trend and technological explosion that the industrial/business world has been living with—all these have added new dimensions to the complexity. In the context of a developing economy like Bangladesh where the need for capital formation provides another dimension, the policies and practices in the field of depreciation accounting become a relevant field of inquiry and research.

1.3 Statement of the problem

The problem of depreciation is complex and multifaceted. Even conceptually there is no unanimity of opinion on its nature, though different views tend to emphasize different aspects of its

\textsuperscript{53}\textsuperscript{Abdus Shahid and A.Z.M. Anisur Rahman, loc.cit.}

\textsuperscript{54}\textsuperscript{Ibid., p.48.}
nature. When one moves from the concept of depreciation to the implementation of depreciation policies, new issues arise. They are: (1) estimation of the working life of fixed assets involved, more particularly whether one should approach it by using biological tables or proceed on some other basis and (2) the purposes of providing for depreciation in business operation where the issues — whether it is a source of funds and how to deal with its accounting by considering the effect of inflation — become very difficult to be dogmatic about.

In the foregoing pages, effort has been made to briefly discuss some of the issues involved in depreciation accounting. Against this background, the problem area of this study may be meaningfully enumerated. Generally speaking, the present study deals with the problems of accounting for depreciation in industrial undertakings in public and private sectors of Bangladesh. More specifically, the problem may be stated in terms of the following questions:

1. What are the depreciation principles, policies and practices in employment in the industries of Bangladesh?

2. What rates, methods, bases and accounting treatment are being followed in implementing the prevailing depreciation policies?

3. What is the impact of the working life estimation of fixed assets on depreciation, cost and profitability of industrial undertakings?

4. Does the prevailing practice in depreciation accounting affect financing and cash flow of the industrial enterprises?
(5) How far is the prevailing depreciation accounting practice in Bangladesh in consonance with the Income-Tax law of the country?

(6) To what extent do the industrial concerns provide for inflation in managing depreciation accounting?

1.4: Objectives of the study

The present study attempts an empirical exploration of depreciation accounting principles, policies and practices of selected industrial enterprises in public and private sectors of Bangladesh. The following are its 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) purpose of charging depreciation;
   e) factors considered for selection of depreciation methods;
   f) factors influencing depreciation rate fixation;
   g) factors and types of life considered for the estimation of working life of fixed assets; and
   h) applicability of Makeham’s law in estimating the working life of machines (more specifically 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.

1.5: Coverage of the study

This study addresses itself particularly to depreciation accounting of selected industrial enterprises of Bangladesh.

The study is chiefly limited to jute, textile, chemical and pharmaceutical and steel industries of both public and private sectors of Bangladesh. In the study are also included two more private sector undertakings of electrical industry. These enterprises, namely, Bangladesh Lamps Limited and Bangladesh Electrical Industries Private Limited have been included in the study exclusively for the purpose of case studies because, throughout the country, they are the only manufacturing organisations which maintain depreciation accounting under a different accounting system—inflation accounting. Discussions on them have been kept confined to Section-B of Chapter IX only.
All these industries referred to above are very important for the economic development of Bangladesh. For instance, jute industry is viewed as the sheet anchor in the economy of Bangladesh because of its contribution in the form of foreign exchange earned for the country, employment generated for the people and stabilization of raw jute prices for ensuring economic return for the growers. Judged by any of the criteria — capital invested, employment, value of production, value added by manufacturer or foreign exchange earnings — it is by far the largest industry of the country. Textile industry is the second largest industry of the country when judged by the size of the capital invested and employment. This industry is wholly domestic market oriented and enjoys somewhat protected umbrella. Similarly, chemical and pharmaceutical industry and steel industry cater to the needs of home market only. All of them belong to capital intensive industries and are significant from national point of view.

This study encompasses a period of eleven years from January 1972 to December 1981 mainly, but in some instances recourse has been made to earlier data also.


56. Gazi Kholiuzzaman and Anwaruzzaman Chowdhury, What has been happening to productivity in the manufacturing sector of Bangladesh? — A case study of selected industries, an unpublished research report, New Series No. 4, Bangladesh Institute of Development Economics, Dacca (September 1972), p.12.

57. Ibid., p.13.
1.6: **Rationale of the study**

The present study has many utilities and has had pragmatic appeal too.

Ever since excepting a few articles\(^5\) and a mini research study\(^6\), there has been actually no in-depth research work on depreciation accounting principles, policies and practices of any industry in Bangladesh. There is, therefore, a yawning gap for research on depreciation accounting which still remains a virgin area of research in the realm of accounting studies in Bangladesh. This maiden study is, therefore, a modest endeavour in this direction to bridge the knowledge gap.

The significance of the study lies, in fact, in its endeavour to answer some relevant questions\(^7\) posed earlier under **Statement of the Problem**.


\(^7\)In order to avoid repetition, the questions posed earlier under Statement of the problem have not been stated here.
The study may focus some light on the improvement of depreciation accounting policies and practices of industrial enterprises in Bangladesh.

The findings of the study may be useful to policy-makers who are interested in the sound administration of the country's industrial undertakings. It is likely that some light may be thrown on whether depreciation is a source of funds or not and whether depreciation impacts on cash flow or not. Some more realistic and rational approach to cost determination and product pricing may emerge from the study. It may also provide a better yardstick to evaluate managerial performance of public sector vis-à-vis private sector industrial enterprises. Above all, the study is likely to provide an interesting exercise to academic scholars concerned with the theory of depreciation accounting.

1.7: Limitations of the study

The present study is subject to the following limitations:

First, the study has been constrained by the dearth of published literature on the subject of depreciation accounting of Bangladesh.

Secondly, the total time allowed to the researcher to visit Bangladesh for collection of data from 260 respondents of 68 industrial enterprises scattered over different parts of the country and to take down information from their books of accounts, annual financial statements and other documents was quite insufficient. This time constraint was a handicap for the required
amount of investigation.

Thirdly, some of the available data were not found to be reliable. However, the attempt was made to use the most acceptable data available and the researcher had no alternative but to resort to value judgements, wherever deemed necessary. Thus, any doubts on the quality of the data were likely to reflect on the results of analysis.

Fourthly, data available in the industrial organisations were not exactly in the form the researcher required for this study. Consequent upon it, a certain amount of approximation and estimation had to be resorted to while reorganising and regrouping the data to fit in the analysis for the study.

Fifthly, since stratified random sampling procedure has been used in this study, "none of the standard tests of significance — parametric or non-parametric — is strictly valid. These tests are valid for simple random sampling. This is a well-known weakness of existing statistical theory". However, in spite of this, non-parametric statistical tests have been used in this work. Results from their use are broadly indicative but not really definitive.

The sixth limitation is that while drawing samples from the stratum of the small population size, the basis of proportional allocation could not be strictly adhered to. The sample size in

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51A private communication dated 6 November 1981 written by Professor N. Bhattacharya, Social Sciences Division, Indian Statistical Institute, Calcutta to the researcher (See in appendix C)
such cases has gone beyond the proportional allocation basis considered in the study.

Seventhly, in some cases, non-parametric tests lose much of their power if the assumption of continuity of distribution is violated; but it is also equally true that "the assumption of continuity of distribution is one that is never met in practice—it is only approximation". Kerlinger is also of the view that a rank order method may take no account of the continuity of distribution. And, on these grounds, in some of the cases of this study, the requirement of continuity of distribution could not be strictly met.

Eighthly, the general rule of applying the chi-square test could not sometimes be strictly fulfilled in this study. There is, of course, according to some authors, the precedence of research which has shown that expected frequency as small as 2 can be used with little risk of serious distortion of results.


64 The general rule is that the chi-square test can be meaningfully applied when the expected frequency in each of at least 80 per cent cells of a contingency table is at least 5 and none in the rest 20 per cent cells has an expected frequency of less than 1.
provided there are 2 or more degrees of freedom. 65

Ninethly, although the researcher has tried his best to review many works (that is, books, articles, papers, research studies, Ph.D. dissertations etc.) on depreciation accounting and allied subjects, many might have, he is afraid, escaped his net by sheer over sight or ignorance. The limitation of resources, time and other facilities precluded access to all the existing stock of literature scattered in different corners of the world.

Lastly, this study is not completely immune from the unavoidable repetition of certain things. However, though the present work has involved the repetition of certain basic things in certain chapters but it has been stuck to enable the reader to get a firmer, clearer and unequivocal idea of what the researcher is trying to establish. For example, depreciation principles, factors guiding depreciation policy, purposes of charging depreciation etc. had to be stated and restated in chapters III and IV; but the restatement has probably served a useful purpose in making the interpretation logical and coherent and the conclusions evident.

1.8: Definitions of important Terms used in the study

1) Taka: In Bangladesh the terminology — 'Taka' is used as a unit of currency. The abbreviated form of 'Taka' is 'TK'.

- 1 U.S. dollar = Bangladeshi Taka. 19.50 and 1 British pound

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2) Sector Corporations: The sector corporations of Bangladesh came into being under the Bangladesh President's order No.27 — The Bangladesh Industrial Enterprises (Nationalisation) order, 1972. They are situated in Dacca, the capital of Bangladesh. They control all the nationalised industrial enterprises spread over various parts of the country. The concerned corporations for this study are Bangladesh Jute Mills Corporation (BJMC), Bangladesh Textile Mills Corporation (BTMC), Bangladesh Chemical Industries Corporation (BCIC) and Bangladesh Steel and Engineering Corporation (BSEC) which were all set up under the aforesaid order. All nationalised jute mills, textile mills, chemical and pharmaceutical companies and steel mills of Bangladesh work under the guidance, supervision and control of BJMC, BTMC, BCIC and BSEC respectively.

3) Industrial Enterprises, Undertakings, Concerns and organisations: These terms have been interchangeably used in this study.

4) Capital Assets refer to the tangible fixed assets like plant and machinery, office equipment, buildings, furniture, vehicles etc. They are all depreciable assets having a limited useful life of more than at least one accounting year.

5) Historical cost: It refers to the original cost of acquiring a tangible fixed asset. This also includes incoming

66 Shamsul Islam, Public Corporations in Bangladesh (Dacca: Local Government Institute, 1975), p.34.
transportation costs, installation costs etc.

6) **Replacement cost**: This cost represents the amount required to replace the old worn-out or obsolete asset by a new one.

7) **Salvage value**: It means a residual value or scrap value or break-up value of fixed assets.

8) **Action of elements**: It means action of floods, earthquakes, storms, fires, exposure to sun, rain, cold etc. 67

9) **Working or Useful life**: It means the period over which a depreciable asset is expected to be used by an enterprise.

10) **Obsolescence**: Obsolescence means the process of becoming out of date or obsolete because of technological development and innovations.

11) **Depreciation and amortization**: They convey more or less the same meaning and have been used interchangeably in this study.

12) **Depreciation accounting**: In this study, it embraces the principles, policies and the treatment of depreciation in accounting. It takes further in its broad sweep the impact of working life estimation of fixed assets on depreciation, cost and profitability, relation of depreciation to financing, effect of tax law and inflation on treatment of depreciation in accounting.

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13) **Depreciation principles**: refer to conventional guidelines and rules of accounting provision for amortization of investments in fixed assets. As Robert N. Anthony and James S. Reece point out that they have developed over time through a process of evolution: "The process of evolution is essentially as follows: a problem is recognized; someone works out what he thinks is a good solution to this problem; if other people agree, its use gradually becomes an accounting principle." These are not as exact as the principles of natural sciences.

14) **Depreciation policies**: Since depreciation guidelines are varied, there is always a managerial choice involved in real life. Accordingly, depreciation policy refers to the actual guidelines chosen for implementation. For instance, an organisation after examining the pros and cons of each method of charging depreciation may take a decision as to the particular method to follow.

15) **Current Purchasing Power Accounting (CPP)**: In the U.K. and Ireland, the first definitive proposals were issued by

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Accounting Standards Committee (ASC) as ED8 in January 1973 followed by PSSAP 7 in May 1974 entitled "Accounting for changes in the purchasing power of money". They are based on the method called "Current Purchasing Power" or "CPP" which involves expressing accounts in terms of 'purchasing power units' rather than 'monetary units'. A supplementary statement showing information in purchasing power units should be annexed to basic accounts based on historical cost under this method. In this case, changes in general purchasing power of money are taken into consideration and the actual rise or fall in the price of a given item/asset is ignored. Clearly, under this system, the general price index is used for restating all items. The general index is normally the General Index of retail prices—all items. This method requires all items to be valued in terms of current purchasing power of the past money actually spent for the acquisition of them (items). This further requires that depreciation should be charged on historical cost adjusted by general price index in terms of current purchasing power of money. Depreciation may be calculated in the following way:

Machine purchased on 1.1.1981 for Taka 10,000
Asset's estimated working life ........... 10 years
Depreciation method used ... ... ... Straight-line
General (Retail) Price Index on 1.1.81 = 100
General (Retail) Price Index on 31.12.81 = 115

70 Private letters dated 25 March 1982 and 13 April 1982 written by J. Bruce Methven, Assistant Director of Accounting and Auditing Research, The Institute of Chartered Accountants of Scotland, Edinburgh to the researcher.

*means Proposed Statement of Standard Accounting Practice 7
(i) Calculation of Current Purchasing Power based cost:

\[
10,000 \times \frac{115}{100} = \text{TK.}11,500
\]

(ii) Calculation of depreciation charge for 1981:

\[11,500 \div 10 \text{ years} = \text{TK.}1,150.\]

16) **Current Cost Accounting (CCA)**

The Current Cost Accounting system, born of Sandilands Committee Report in September 1975, transformed into ED 18 by Morpeth Committee in December 1975, rejected by the members of the Institute of Chartered Accountants in England and Wales in July 1977, recast and reshaped by Hyde Committee, and released as interim recommendation on inflation accounting (known as Hyde Guidelines) in November 1977, subsequently developed into ED 24 in April 1979, and finally proposed as a standard, SSAP 16 Current Cost Accounting

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(being effective for accounting periods beginning on or after 1 January 1980) obviously bears the imprint of a long historical development. The publication of ED 24 in April 1979 marks the latest stage in the journey from the recommendations of the Sandilands Committee via ED 18 of Morpeth Committee and the Hyde Guidelines towards the general implementation of financial reporting on the basis of Current Cost Accounting (CCA).

The principle of depreciation adjustment contained in ED 24 is same as the principle contained in both ED 18 and the Hyde Guidelines.

Under SSAP 16* (that is, ED 24) which sets out the system of CCA to be used in the U.K., most physical assets, like fixed assets and stocks are required to be stated in the CC (Current cost) balance sheet at their "Value to the business". The value of the assets to their business is their "deprival value", that is, the maximum amount of loss that would be suffered by the company if it were deprived of the assets concerned. The loss suffered by a company on being deprived of an asset can be estimated from the following angles:

(a) the cost of replacing the asset in its existing condition (its net current replacement cost); (b) the loss of the future earning potential of the asset (its economic value); and (c) the loss of the estimated net sale proceeds (its net realisable value).

What is important to note here is that the "Value to the

*means Statement of Standard Accounting Practice 16
"business" is normally the cost at which an asset can be replaced (net replacement cost). But this may be substituted by the net realisable value or economic value whichever is higher, if such values are less than replacement cost.

In CCA, depreciation is charged by reference to the current cost or the "value to the business" or the "deprival value" of fixed assets. The current cost of assets can be normally calculated through the application of relevant price indices to existing gross book values. Relevant indices are specific to the industry concerned.

Under this method, depreciation adjustment is made for the difference between the "value to the business" of fixed assets consumed and the amount of depreciation charged in the historical cost accounts. The resulting total depreciation charged thus represents the "value to the business" of that part of fixed assets consumed in earning the revenue of the period.

Depreciation may be calculated in the following way:

Specific price index on 1.1.1981 = 100
Specific price index on 31.12.1981 = 120

(other data are same as those used under CPP accounting)

(i) Calculation of "value to the business" or "deprival value" or "current cost" of the existing old asset:

\[ 10,000 \times \frac{120}{100} = \text{TK. 12,000} \]

(ii) Calculation of depreciation:

\[ 12,000 \div 10 \text{ years} = \text{TK. 1,200}. \]
17) Replacement Cost Accounting (RCA) The U.S. Securities and Exchange Commission in Accounting Series Release (ASR) 190 requires supplemental disclosure of replacement cost data. Replacement cost is that amount of cash or equivalent which is required to acquire an asset to perform the same function as the owned asset. The asset by which to replace the owned one may produce a different quality of output from that of the owned asset on account of technological development. Under this method, the holding gain or loss is included at the time of computing income and depreciation is charged on replacement cost. But in CCA, holding gain is kept separate from operating gain and credited to Revaluation surplus account. In this case, depreciation may be calculated in the following way: for the purpose of notionally replacing the existing old machine at the end of 1981, purchase price of the new machine is likely to be higher than the "value to the business" of the existing old one. So, let, in this case the specific price index for the new machine be 125 on 31.12.81 as against 100 on 1.1.1981 (other data are same as those used under CPP method).

(i) Calculation of replacement cost: \( 10,000 \times \frac{125}{100} = \text{TK. 12,500} \)

(ii) Calculation of depreciation charge for 1981:

\[
12,500 + 10 \text{ years} = \text{TK. 1,250.}
\]

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18) **Continuously Contemporary Accounting (Cocoa)**

R.J. Chambers developed this COCOA technique which is also known as Current Cash Equivalents (CCE). This is based on contemporary market selling price. The synonymous terms used for contemporary market selling price are "exit value", "net realizable value", "resale value" etc. In COCOA, the charge for depreciation is, in fact, not a calculated figure but is merely the residual difference when the resale value of an asset at the start of an accounting period is compared with the resale value of the same asset at the end of the accounting period. In other words, in COCOA, the variation in the resale value of an asset from the beginning to the end of an accounting period is reflected in the asset account and in the profit and loss account. If there is a drop in the resale value, this is termed depreciation. For instance:

- **Asset value on 1.1.1981** =TK. 10,000
- **Resale value on 31.12.1981** =TK. 9,350
- **Depreciation charge for 1981** =TK. 650

19) **Discounted Cash Flow Approach (DCF)**

In the DCF approach, depreciation can be thought of as a reduction in the value of a fixed asset arising out of a change in the expected profit stream.

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74 A private letter dated 13 April 1982 written by J. Bruce Methven, Assistant Director of Accounting and Auditing Research, The Institute of Chartered Accountants of Scotland, Edinburgh to the researcher.
future earnings of the asset (rather than as an allocation of cost of the asset, whether this is historical cost or replacement cost). In measuring this concept of depreciation, it is necessary to estimate the net cash receipts in future periods which the asset is expected to yield over the remainder of its useful life. Depreciation between any two points of time can be measured simply by the difference between the discounted values of the future net receipts at those points of time. This method of calculating depreciation charges can result in constant, reducing, or even increasing depreciation charges over an asset’s life, depending on the estimates made during its life with respect to the stream of future net receipts and the rate used for discounting purposes.

In general terms, if an asset is expected to produce net receipts of Taka X per annum for n years, its present value equals:

\[
\frac{X}{r} \left[ 1 - \left(\frac{1}{1+r}\right)^n \right]
\]

where \( r \) is the discounting rate. After one year, it will only be expected to produce net receipts of Taka X per annum for (n-1) years, and its present value at the point of time will be:

\[
\frac{X}{r} \left[ 1 - \left(\frac{1}{1+r}\right)^{n-1} \right]; \text{ Its depreciation during the year thus equals:}
\]

\[
\frac{X}{r} \left[ 1 - \left(\frac{1}{1+r}\right)^n \right] - \frac{X}{r} \left[ 1 - \left(\frac{1}{1+r}\right)^{n-1} \right]
\]

\[
= \frac{X}{(1+r)^n}
\]
Example

Net receipts: TK. 1,000 for 10 years
Discount rate: 10% (being, for instance, the internal rate of return on similar projects)

Depreciation: The present value of TK. 1,000 for each of next 10 years is TK. 6,145. The present value of TK. 1,000 for each of next 9 years starting 1 year from now is TK. 5,759.

The depreciation charge for the first year is TK. 6,145 - TK. 5,759 = TK. 386.

In year 2, the corresponding figures are TK. 5,759 - TK. 5,335 = TK. 424.

Alternatively, in year 1, the amount of depreciation will be:

\[ \frac{x}{(1+r)^n} = \frac{1,000}{(1+0.10)^{10}} = TK. 386 \]

Similarly, in year 2,

\[ \frac{x}{(1+r)^n} = \frac{1,000}{(1+0.10)^{9}} = TK. 424 \]

20) "Assessor" means a person by whom income-tax or any other sum of money is payable under The Income-Tax Act, 1922 and includes every person in respect of whom any proceeding under this Act, has been taken for the assessment of his income or of the loss sustained by him or of the amount of the refund due to him and every person who is required to file a return of income under section 22."

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