PRODUCTIVITY TRENDS, PROBLEMS AND STRATEGIES OF SELECTED ENTERPRISES OF BANGLADESH

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Md. Sirajul Islam

DECLARATION

I hereby declare that the material embodied in this thesis is original. It has neither been copied nor submitted earlier in part or full for any other Diploma or Degree of the University of Dhaka or any other University/ Institution.

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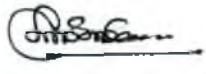

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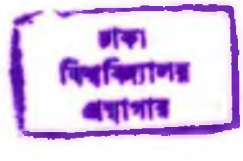

PREFACE

To face the challenges of 21st century, the enterprises need to be flexible to meet the fast pace of technological changes. The organizations have to anticipate and respond quickly to customer needs as well as changes in the environment at international, national and organizational levels. They can do these by improving the existing productivity level of the enterprise and also by adopting new strategies by implementing new technology, redesigning the existing manufacturing systems, office automation, information technologies and automated material handling systems. Set-up times, lead times, lost times and design times must be reduced to make the enterprises more competitive. The successful implementation of this strategy requires the collection and dissemination of information throughout the organization. This has become possible because of excellence in the technology, the infusion of information, telecommunication and computer technologies.

Due to globalization, our enterprises have been exposed to uneven competition with the foreign modern enterprises. The technological advancement has made it possible to supply goods at lower price and at the same time with good quality. Our enterprises have to face this challenge for their survival. Their productivity has to be improved by taking appropriate measures.

Unfortunately, there is no National agency working to prepare the Industrial index. An enterprise if wishes will not be able to compare its performance with the national average. The basic problem of our enterprises is that they do not even know their present productivity level. Many enterprises are satisfied if they earn profit at the end of their financial year. They are not aware about their inherent problems and

weaknesses. More importantly, they do not know the value addition of their enterprises. The relation among sales, salary level and value addition is also not known. The salary level of the employees and staff is increasing over the years. The increased salary is putting pressure on to the enterprises. The pressure has to be offset by adding more values.

The study was thus aimed to pick up relevant models by studying the literatures and then apply these models to the local enterprises to measure the productivity & profitability and see their trends, understand the problems, assess the value addition, asses the growth rate and establish linkages among value addition, sales and manpower number including the salary issue. The ideal situation of an enterprise will be if both the productivity and profitability are positive. These will indicate the sound financial and overall situation of that enterprise. The computation of the total and partial productivities of a particular year may help the enterprise to set its own base standard. It can compare its future result with that base index of productivity and profitability.

Japan being in the forefront of the productivity culture and practice has formulated different models for the assessment and improvement of the profitability and productivity. There are number of models described in the literatures. Among these, 3 models have been picked up relevant to the local enterprise level productivity and profitability. These are (i) 22 parameters to measure the total and partial productivities, (ii) Company Performance Appraisal and the third is (iii) Value Added Productivity Measurement (VAPM). However, each model has limitations and shortcomings. Despite their shortcomings, these models can be used successfully to the local enterprises regardless of their types as each has the potentiality to guide the future course of action for uplifting profitability and productivity.

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ABSTRACT

The Study entitled "Productivity Trends, Problems and Strategies of Selected Enterprises of Bangladesh" is a quest to find out the appropriate models, which will measure the productivity and profitability levels of the enterprises regardless of their sectoral representation. The underlying assumption was that the parameters to be used in the models to be generic in nature so that these could be used in every enterprises.

In attempting to select the models, it was noticed value addition plays a vital role in the enterprises and this should be the focal point they should target. The benefit sharing patterns, future optimum manpower levels, sales volume etc. are to be linked with the value addition. If the value addition is bigger, the stakeholders will receive bigger slices, but if the value addition starts decreasing, the stakeholders will be in a difficult position to absorb that.

Through study of the literatures, it was attempted to locate the desired model(s) that would be capable to locate the problems of the local enterprises and then show strategies for improving the profitability as well as productivity. The study was also focused on to relate the value addition with the optimum manpower requirement of the enterprises at a given future year.

After selecting the models, the computations have been computerized in Excel programme to avoid manual calculation of the parameters. The results are also applied to generate graphs automatically to give better understanding. The models have been applied to five local enterprises namely, Arab Bangladesh Bank Limited, representing financial sector, ACI Limited, representing pharmaceutical sector, Bangladesh Lamp Limited, representing electronics sector, Bangladesh Oxygen Limited, representing utility sector and Dulamia Cotton Limited, representing textile sector which were selected by judgmental sampling technique. Their balance sheets were collected for study. Few data were collected through interview and face to face communication with the Executives of these selected enterprises.

for the improvement of the productivity. The win-win situation is when both the productivity and Profitability are positive.

Mr. Alan Lawlor suggests four general stages of any productivity improvement process. Firstly one has to recognise the need for change and improvement; secondly after convincing one should take measure to improve, a decision must be made to act; thirdly, there must be opportunities to implement decisions; and finally, actually implementing plans for productivity improvement, which should be the ultimate objective.

The first model (**Productivity Audit**) analyses total and partial productivities through 22 parameters. The trend of these parameters has diagnosed the health of the enterprises. Based on the trends, the model outlines the action plan.

The second model (**The company performance appraisal system**) depicts that if the growth rate of an enterprise is positive, it indicates that the profitability of this enterprise is good and in this case the priority area of the enterprise will be to increase the productivity. But on the other hand, if the growth rate is negative, the priority area of the enterprises will be to intervene in the profitability factors and the secondary area of concern will be productivity.

One of the key issues of the enterprises is to optimize the manpower requirement. There should be a linkage with the value addition. The employees receive their salaries and benefits as a percentage of value addition. With the passage of time, the benefits will be increased at a certain percentage in every year. If value addition remains same in the future, the percentage of salary and benefits (labour share) will be increased. This means that the profitability will be decreased. This will eat up the bigger slice. To address this problem, the value addition has to be increased along with the increase of sales volume. The last option will be to cut down the manpower size. The third model (**Value Added Measurement of Productivity**) deals with this issue quite nicely.

The models have identified the trends and these strategies have paved the ways to put recommendations for the enterprises.

The first and second model can be used independently, as both tries to measure the total and partial productivities of the enterprises. The first model has some different ratios like system conversion ratio, throughput ratio, competitive edge ratio etc. On the other hand, the second model has some unique ratios to look at like, value addition by plant and machinery, Value addition by work hour etc. It seems using both models will lead the study more complete.

Each of the models has limitations. The value addition being the focal point of all the models can be influenced to a large extent by the technological factors, skill and motivational level of the employees, Government policy in the form of Tax & VAT, management style etc. The formulae have not considered these limitations.

Despite these limitations, when applied to the local enterprises, these models adequately demonstrated their capabilities to find out the value addition, profitability, total and partial productivities, and linked manpower among wage, value created and sales volume regardless of their types. More importantly, the enterprises can get their own standard base index for its future comparison as no National index is available.

However, these models can only be applied to the enterprises, which produce data and generate annual accounts. Both the secondary and primary data were used in the study.

Through this study, we may draw a conclusion that the models can be applied with reasonable accuracy to our local enterprises regardless of their types and these can guide in setting own performance index and locating the future areas of intervention to improve the profitability and productivity. As the third model can establish linkage among salary, sales, value addition and number of manpower this could be used as the basis in negotiating salary and benefits during bipartite agreement.

Glossary/Abbreviation

NPO	National Productivity Organisation
PSW	Productivity Services Wing
BOJ	Bank of Japan
MOF	Ministry of Finance (Japan)
MITI	Ministry of International Trade and Industry (Japan)
MRI	Mitsubishi Research Institute, Inc. (Japan)
JDB	Japan development Bank
SMEA	Small and Medium Enterprise Agency (Japan)
Rucker	Allan W. Rucker
JPC	Japan Productivity Centre
W.C	Working Capital
C.A.	Current Asset
ROI	Return on Investment
ROA	Return on Asset
V.A.	Value Added
G.R.	Growth Rate
CPI	Consumer Price Index
ILO	International Labour Organisation
UNDP	United Nation Development Programme

Introduction

Productivity is a dream word being used by the academician, politician and the business leaders of the country. They try to say, unless productivity is raised, the local enterprises will be out of the market despite low wage rate. On the other hand, the productivity alone can not bring the total rosy picture to the enterprises, unless the profitability of the enterprises is not at a desired level. It should be the win-win situation. Both the productivity and profitability should be at a desired level for the strong hold of the enterprises.

By talking to the Executives and Officers of the enterprises, it is seen that the very concept of productivity is not clear to all. They confuse between productions with productivity. By increasing the input resources, the production can be doubled, tripled but increasing productivity is very difficult. The optimum utilisation of the input resources can only ensure higher productivity.

Overview of Productivity Scenario of Bangladesh

Like many LDCs, the pressure on Bangladesh is to be internationally competitive and this has to be increased in the next few years, particularly for the WTO Agreement and the currency crisis in the East Asian countries. For this, there is an increased need to give more attention to productivity. Already return on investment has been depleting. This will be evident from the fact that a large number of companies listed with the country's stock exchange could not give any dividend. By any standard this is a national issue but business being in the forefront, it is being left to them to be more productive and through productivity, more profitable.

Productivity plays a vital role in accelerating economic development of the country; it should be the first strategic objective of economic and social policies. The government thus should play the role of a facilitator and a catalyst to create an environment where organizations will strive for excellence and gain competitive advantage, rather than be directly involved in business activities except in nations, which are in the early stage of development.
Experts have identified the following enterprise-related factors, which contribute to Low Productivity (NPC report, 1999)

a. Lack of skilled manpower

b. Lack of skilled managerial people
c. Low motivation of workers
d. Low consciousness about quality
e. Low material productivity
f. Inability to deliver products or services in time
g. Low automation
h. High inventory etc.

Definition of Productivity

A general definition of productivity is the relationship between the output generated by a production or service system and the input provided to create this output. Thus, productivity is defined as the efficient use of resources - labour, capital, land, materials, energy, and information - in the production of various goods and services. Higher productivity means accomplishing more with the same amount of resources or achieving higher output in terms of volume and quantity for the same input. This is usually stated as:

$$\frac{\text{Output}}{\text{Input}} = \text{Productivity (Joseph Prokopenko, 1987)}$$

Sometimes, the inputs are expressed in 6 M's: Man, Machine, Material, Method, Money and Market. The output is generally goods or services. There are many qualitative definitions available about productivity. Let us see some of the important definitions of Productivity provided by the leaders of productivity movement.

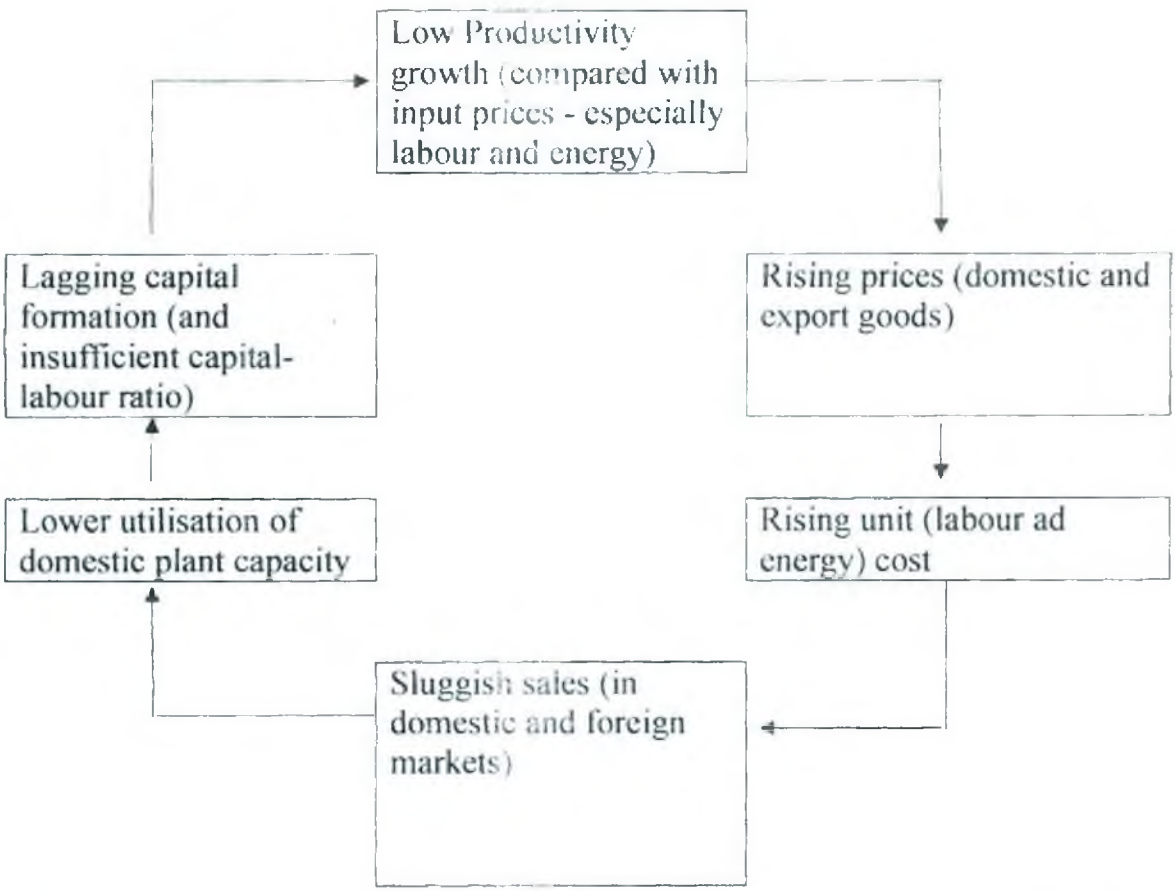
There are number of definitions on productivity are available. Some of them are as follows:

1. Productivity is an attitude of mind that strives for and achieves the habit for improvements, as well as the systems and the set of practices that translates that attitude into action: (a) in and by ourselves through constantly upgrading our knowledge, skills, discipline, individual efforts and teamwork (b) in our work through better management and work methods, cost reduction, timeliness, better systems and better technology so as to achieve high quality products and services, a bigger market share and a higher standard of living(NICC, 1996)

Thus, low productivity results in inflation, an adverse balance of trade, poor growth rate and unemployment. Following figure presents a simplified causal relationship between many variables and factors affecting productivity.

Model for a low- productivity trap

Joseph Prokopenko has outlined the following cycle for the low productivity:

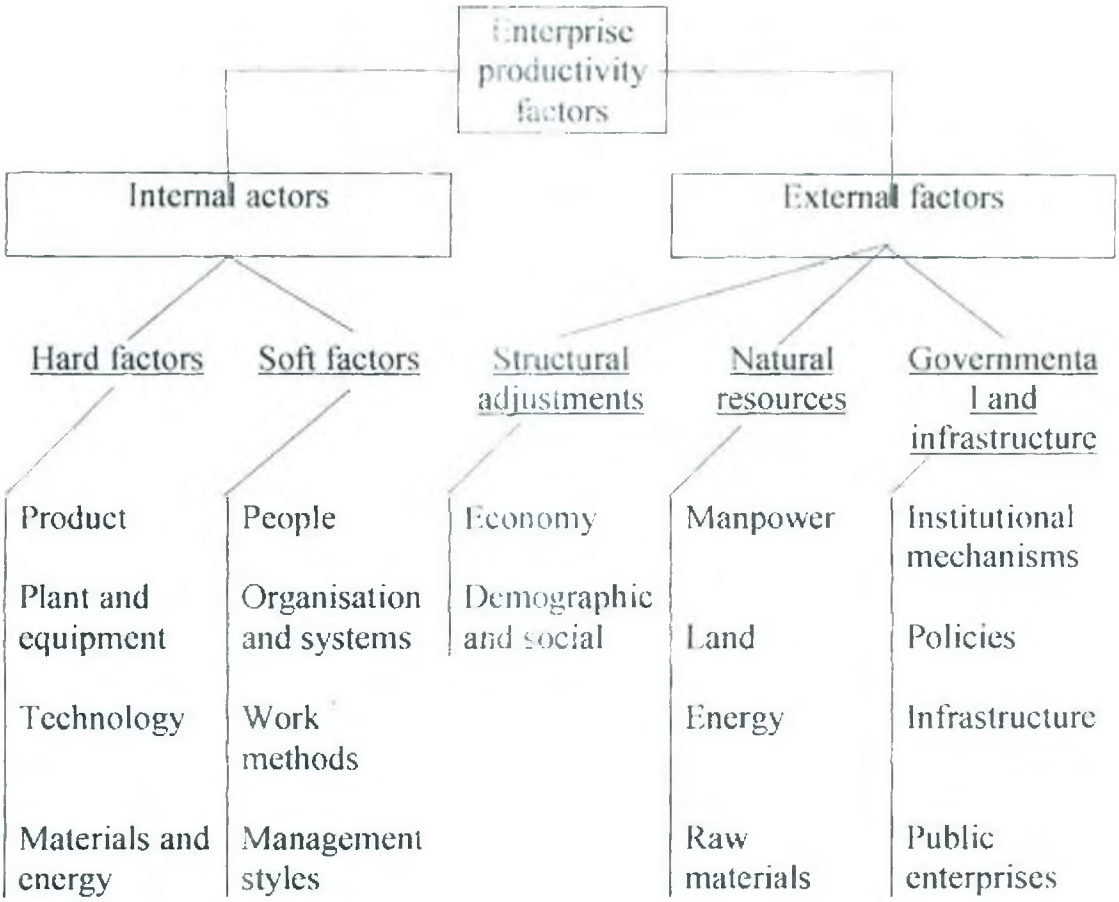


It is clear that only increasing productivity can break the vicious circle of poverty, unemployment and low productivity. Increased national productivity not only means optimal use of resources, but also helps to create a better balance between economic, social and political structures in the society. Social goals and government policy largely define the distribution and utilisation of national income. This in turn influences the social, political, cultural educational and motivational work environment, which affects the productivity of the individual and the society.

An integrated model of enterprise productivity factors

The factors, which have influences on the productivity of an enterprise, are

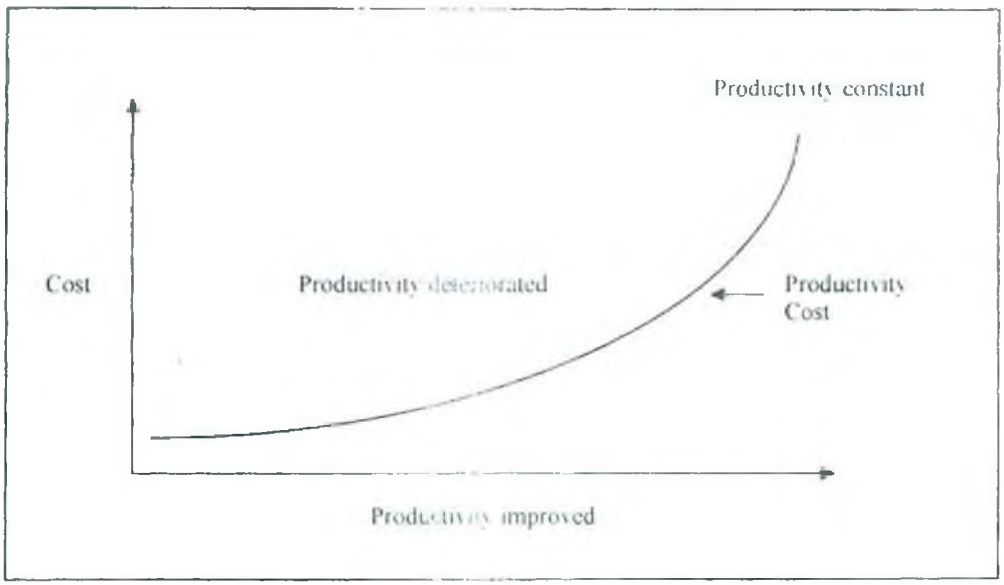
outlined below (Joseph Prokopenko, 1987):



To deal with all these factors we require different institution, people, techniques and methods. For example, any performance improvement drive which plans to deal with external factors affecting the management of the enterprise must take such factors into consideration during the planning phase of the programme, and try to influence them by joining forces with other interested parties. Thus it is clearly seen that the first step towards improving productivity is to identify problem areas within these factor groups. The next step is to distinguish those, which are controllable.

Productivity and Quality

Quality can be defined as conformity to requirements. In other words, quality is the sum of features and characteristics of a product or services that bear on its ability to satisfy a given need. The basic elements of product quality are: performance, features, reliability, conformability, durability, serviceability, aesthetic and perceived quality.



The relationship between productivity and quality are shown in the following formula:

$$\text{Production} = \frac{\text{Total amount of effective input (valued in money)}}{\text{Total quantity of products satisfying quality level}}$$

$$\text{Cost}$$

Relation between Labour Productivity and Capital Productivity

Labour productivity could be improved by virtue of capital productivity and vice versa. The following relations between shows how C/L ratios could behave and what to do (Joseph Prokopenko,1987):

Case	IF			THEN	
	Labour Productivity	Capital Productivity	C/L ratios	What Happen	What should be done
1.	↗	↗	↗	Good productivity performance	Maintain or increase productivity further
2.	↗	↗	↘	Good productivity performance	Maintain or increase productivity further
3.	↗	↗	↘	Unfavourable productivity	Increase capital productivity

				performance	
4.				Satisfactory productivity performance	Increase labour productivity by: a. Developing / identifying other jobs for displaced labour b. Retaining displaced labour for other jobs
5.				Poor productivity performance	First increase capital productivity, then increase labour productivity. Adapt available manpower to machines
6.				Satisfactory productivity performance	Increase capital productivity
7.				Unfavourable productivity performance	Increase capital productivity
8.				Poor productivity performance	First, increase labour productivity, then increase capital productivity

Source: E. Avedillio-Cruz, 1984, p-26

Productivity Programmes of Bangladesh

To foster the benefits of the productivity in improving the profitability of the entrepreneurs, Govt. and also the private sector agencies are working since long. The two major organisations which are engaged to this noble task are:

a. National Productivity Organisation (NPO)
b. Productivity Services Wing (PSW)

National Productivity Organisation (NPO)

National Productivity Organisation (NPO) is affiliated with Asian Productivity Organisation (APO) representing the country's lone Government organisation to foster productivity of the different industrial sectors of the country. This organisation runs under the Ministry of Industry. The major works of the NPO are as under:

a. Scrotal productivity measurement
b. Assessing enterprise level productivity
c. Organising Productivity related training programmes
d. Organising National seminars
e. Organising Fellowship programmes

There is no independent study on the effectiveness of the NPO services. However it is learnt that being the government agency, they are unable to deliver the customised services to the targeted groups.

Productivity Services Wing (PSW)

Productivity Services Wing is the sister concern of Bangladesh Employers' Association. It is the lone organisation in the private sector to help the industrial sector. It started its journey in 1978. From 1984 to 1997, UNDP funded PSW to create a substantial impact on the industrial sector.

The major role of the PSW is as under:

a. Assessing the Productivity of the enterprise
b. Providing consultancy services to improve productivity
c. Organising in-house and in-plant training programmes for the entrepreneurs.
d. Organising seminars

It is believed that the recipients of the services from PSW will have multiplier effect on the economy.

After the closing of the funding by the UNDP, the organisation is being operated through direct control of Bangladesh Employers' Federation. Federation also works closely with the NICC of Japan to receive productivity related consultancy services and training. The member firms are taking interest about the subject. About 30 Executives of different member firms have attended fellowship programme at Japan to see the productivity culture and the means & ways to implement the productivity techniques.

Chapter 1
Literature Survey

Introduction:

The publications on productivity are not widely available at the libraries. The works done on local context are very few. However, following publications have been surveyed which have relations with the present study on productivity.

1.1 **Productivity Measurement** edited by David Bailey and Tony Hubert, published by Gower for British Council of Productivity Association, 1980.

The author described the secrets and issues of productivity. He cited some inter-firm comparison in Canada and also using company reports to compare inter-firm productivity. He also mentioned various techniques to measure public firm production, output and input capitals. The highlighted area of his study is "Action 80" which describes the step by step procedures like

- Keep your company in good shape
- Sectoral and inter-firm comparison
- Corporate Planning
- Implementation & Finance

1.2 **Improving total Corporate Productivity** by Raymond A. Boy; published by Van Nostrand Reinfold Company, NY, 1986.

The author said productivity analysis should be tailored made to the conditions. The intention provided a general framework for helping understand what is and why it's impartial as well providing insight into a number of frequently used techniques for meaning, changing, influencing and maintaining levels of productivity.

This author showed how simple measurement like pay incentive can enhance the productivity. He also encouraged with simplification and employee suggestions programmes.

1.3 **Better Quality of work life through Productivity**: International Productivity Congress: APO, 1988.

This publication is a compilation of papers presented in four-day International Productivity Congress (IPC '9') organised by APO in Bangkok. The main theme of the congress was better quality of work life though Productivity and its five sub themes were productivity Dimension and appropriate means to Accelerate improvement in Quality of work life measurement for employment Generation and equitable, Showing of productivity gains, Human Resources Development strategies, Labour Management relations to productivity improvement and productivity in an information society.

The APO hopes that the compilation will be informative and fruitful in stimulating and permeating a forward-looking attitude and a dynamic perception on improving the quality of work life within and outside the region. The APO believes that Productivity is an attitude of mind and that the key factors influencing productivity are the enthusiasm and creative skills of human beings that make them productive.

1.4 Productivity & Economics Transformation by APO, 1996.

This is a prize winning essay publication organised by APO since 1990 to encourage dissemination of useful information and experience of APO member countries.

This essay focused on two related aspects of the theme, Productivity and Economic Transformation. Firstly the phenomenon of productivity and economic importance are analysed to show that they are dynamically linked. The existence of this dynamic relationship implies that it showed be adopted. This has direct implications on the policy approach that should be adopted by the govt. Secondly, the importance of human capital investment in supporting experts to facilities the productivity economic transformation process is singled out.

The approach of the essay is largely heuristic. The arguments are based on an analysis literature both theoretical and empirical on productivity and economic transformation.

1.5. International Comparison of labour Productivity by S. Hajra, published by Tulsi Publishing home, New Delhi, 1984.

The study revealed that better deployment of labour and capitals have led to more substantial improvement in productivity. He found some factors as under causing the productivity.

- Capacity utilisation
- Infrastructure bottlenecks

- Internal resources generation
- Government controls on production and Price
- Industrial relations
- High rate of interest

1.6 **Wages, Profits and Productivity in selected industries of India**, published by Himalaya Publishing House, Bombay 1984.

This book compared the wage, profit and productivity of different sectors of India after the liberation. It showed many statistics to compare the results having different dimensions.

1.7 **Wages and Productivity in selected Indian Industries** by J.N. Sinha & P.K. Sawhney, published by Vikas publications, Bangalore, 1970.

This is a study on the subject. It concludes that the observation that for operational purpose, the principle of living wage to labour productivity needs a few qualifications. First it is necessary to take due amount to changes in productivity of other inputs. Secondly the amount divisible between labour and capital which determines their respective compensation will also depend on the prices of raw materials relating to output prices. Finally, parity but productivity prices of the industry and all other prices is needed if linking wage to rising formality is to yield simultaneous increase in real wages and real rate of returns.

1.8 **Education and Economic Productivity**, edited by Edwin Dean, published by Ballinger Publication Company, Cambridge, 1984.

Economic grow by accumulating productive resources and by improving the process through which resources are true formed into consumable goods and services. The amount of growth of education and output in most economies has provided an impetus for establishing a causal link from education to productivity.

The paper preceded as such that in first section, a simple tautological two-period characterisation of growth to illustrate the questions that might be asked and the next section, they developed a stereotype of the marginal accounting framework that emphasis the role of intermediate factors of production, like education.

1.9 **Productivity in service organisation: Organising people** by Herbert Heaton published by McGraw Hill Book Company, 1977.

In this book, the author has tried to elaborate organisation models and the hierarchy of organisation methods, how to established models and

process; how to changing people problems into work problems, detecting organisational garbage, accepting, including, and discharging, joining participating & learning, developing and defining. He also tried to show the developing and maintaining the complete organisation.

The book focused on the methodology of effective changed in achieving two responsible objectives: Improving the productivity of organisations in serving people and developing individual in organisation.

1.10 Improving productivity and affections by Morvin & Mondel, published by prentice Hall Inc. 1983.

This book is intended to provide a flexible methodology for applying quantitative management techniques to all industrial and governmental activities including services, staff and indirect work. The necessary concepts, terms and procedures are given in detail. The purpose is to facilitate the measurement and subsequently improvement of the effectiveness and productivity of all parts of all organisations. About 30 cases are listed showing the application of methodology and covering a wide range of activities.

1.11 Industrial Productivity by Michael M. Grumeberg and David J. Oberne, published by the Macmillan Press Ltd., 1982.

This book looks at the way in which the work environment can affect the individual's willingness and capacity to produce effectively. This topic such as the nature of work itself, financial incentives, work groups, the physical context of work and individuals differences in response to work has been considered. This book also dealt with psychological aspect of problematic work adjustment, such as absence, job turnover and stress and conflict at work and has considered methods of job redesign aimed at alleviating some of the problems currently found at work.

This book reveals number of factors that have effect on productivity. It is shown that introduction of financial incentives improved productivity by 30% compared with goal setting, which improves productivity on average by 16% and job redesign, which improve productivity 17%. Each incentive is likely to have value under certain conditions only.

1.12 Productivity Gains Through Work life Improvements by Edward M. Glaser, Published by Marcourt Brace Jovenovich, NY, 1976.

This book does not in itself pretend to constitute basic research but it does present and attempted to integrate a good deal of relevant research.

Through different cases, problem of the enterprises are identified like, organizational resistance, resistance of labours failure to accommodate change, pitfalls in the introduction of organizational development program etc. The book tried to introduce a job redesign on quality of work life programme.

Through case studies, the report tries to strengthen the conviction that increasing carrier opportunities and inviting employees to have a significant degree of influence in designs made about the design, organisation and rewards of their work frequently lead to greater productivity as well as to greater job satisfaction. People perform better when the work situation encourages ego-involvement in shorting the tasks they are asked to perform, and manifest facilitative interests in employees. By increasing the productivity the price of the product can be decreased to arrest inflation.

I.13 Management of Productivity in Indian Industries edited by B.S. Bhatia, published by Deep & Deep publications, 1988.

This is a compilation of several cases of Indian industries presented at National Seminar on Management of Productivity. Different presenter showed different ways to improve the productivity, like incentive control to deteriorating items, technological change and productivity strategic for management of productivity. This book also indicated different techniques to improve productivity, like employee based productivity improvement techniques (financial incentives, std. Hour, piece work plan, fringe benefits, promotion, job enrichment, job rotation, working conditions, communication, and recognition. Product base productivity implements techniques (Values analysis, product diversification, product standardisation, and research & Development emulation ad. & sales promotion), Task based productivity improvement techniques (Work Management, Job design, job safety design, Human, factory engineering, production scheduling). Technology based productivity improvement techniques (Computer

enterprises to set strategies in reducing loss in a long run and make profit.

One of the models has been taken from this book.

1.18 Productivity Compass published by Malaysian Productivity Board, 1994.

This publication showed how to determine productivity of the enterprises and analyse the trends of total and partial productivity in locating the future intervention plans for the improvement of the productivity and profitability. The book demonstrated the ideas by taking live projects from their country. They showed how to assess the productivity trends and take measures accordingly.

The 1st model has been taken from this publication.

1.19 Productivity Awareness of the South Asian Countries edited and published by NICC, Japan, 1997-98.

This is a compilation of the reports submitted by the participating countries; Bangladesh, India, Pakistan, Nepal and Sri Lanka. One survey was conducted among the participating countries, which showed that the level of understanding of the productivity at enterprise level is in its nascent state. The respondents are not clear about the differences between improving the production and productivity.

1.20 Productivity Management: A practical Handbook by Joseph Prokopenko, published by International Labour Office, Geneva, 1987.

Joseph Prokopenko, senior consultant in the ILO Management Development Branch has written this book. The author has had extensive discussions with internationally recognised specialists and writers on Productivity improvement and with the colleagues both at ILO headquarters and in field projects. In addition he has examined an impressive amount of material on productivity issues in both industrial and developing countries.

In this book, the writer has shown different models in measuring and improving the productivity, like. ILO/PIP model, ALA performance improvement programme, In-plant action learning, Productivity improvement Circles(PIC), Performance Action Team process(PAT), Inter-firm comparison and business clinic approach(IFC/BCA). This book also suggested to several productivity improvement techniques like Work study, Work simplification, Pereto analysis, Just-in-time method, Management through value analysis, Cost- Benefit analysis, Zero–based budgeting, Cost–Productivity allocation, waste reduction, maintenance improvement, improving through Quality etc.

2nd model has been picked up from this book.

Chapter 2
Statement of the problems, objective of the study and Conceptual Framework

2.1 Statement of the Problems

The GDP contribution by the industrial sector is around 10% for the last decade. For the overall improvement of the economy and the employment generation, more and more industries have to be established and the existing industries to be expanded.

With the implementation of the free market economy by the Government, the local enterprises are exposed to an uneven competition. Over the period of time, the profitability of the enterprises is reducing. As per government statistics, more than 2000 industries have become sick due to their financial health. The enterprises have to make profit for their survival.

If we see the following relationship among the profitability, productivity and Price recovery factor, we will notice that profitability of the enterprises is directly proportional to their productivity level and price recovery factor.

Output value	=	Quantity sold	x	Unit price
↑		↑		↑
Profitability	=	**Productivity**	x	**Price recovery**
↑		↑		↑
Input value	=	Quantity used	x	Unit cost

The price recovery factor is the difference between price and the selling price. In a competitive world, it is not possible to raise the price of the products to increase the profitability of the enterprises. On the other hand, cost cutting of the input resources is unlikely as the costs are increasing over the period of time. The salary, utility and the imported raw material prices are increasing due to devaluation of the dollar and so on for the other inputs. So, it's becoming a daunting task for the entrepreneurs to keep the unit cost at a sustainable level.

On the other hand, profitability can be increased by increasing the productivity in two ways. Firstly, if the input quantities to be used could be reduced by reducing their wastage and secondly the output

quantity to be produced could be increased by automation or other means would increase the profitability. Following are some areas which can play vital roles in improving the productivity of the enterprises:

- ❖ Raw materials
- ❖ Infrastructure facilities
- ❖ Utility supports
- ❖ Market condition
- ❖ Transport facilities
- ❖ Stage of automation
- ❖ Skill level of the of the employees
- ❖ Motivational level of the employees
- ❖ Quality consciousness of the employees
- ❖ Inventory management

If we look around the globe, the companies are expanding their market by increasing their enterprise level productivities. Japan is the classical example. The productivity of the local enterprises are not even comparable with the productivity of the neighbouring countries, like India, Pakistan and Sri Lanka as revealed by the study conducted by the Bangladesh Employers' Federation through NICC sponsored project on Productivity for the South Asian Countries.

In national level, we do not have any industrial index. An enterprise can not compare its performance for lack of information on that sector. Alternatively, the enterprises can compare their result with their past performances. The enterprises have to set their respective index and compare with that. The productivity ratio could be the index of the enterprises.

Most of the Asian countries are practicing productivity since long. India has started its movement during 1962 and Japan back in 1950. The productivity measurement and improvement techniques helped their industries to foster their growth. In our country, we have started to raise the slogan but there has not been any real work done.

2.2 Some problems of productivity analysis

The problems and difficulties in productivity analysis fall into two, main group: those concerned with **the techniques of productivity measurement**, and those concerned with the **organisation**.

2.2.1 Technical productivity measurement problems

There is no single universal measure or productivity because various groups (such as materials suppliers, buyers, users, product sellers, etc.) have different goals and therefore use different sets of productivity measurements.

The most common problems, which the designers of particular productivity measurement systems should take into consideration, are:

- how to combine different types of input into one acceptable denominator;
- how to deal with qualitative changes in. input or output over time;
- how to keep input and output measurements independent of each other.

Some organisations focus all their attention on the productivity of one particular section. Another mistake, especially in public offices, is when managers confuse activities, output and results. For example, in training programmes an incorrect measure would be the number of people trained; the correct one would be the number of trainees who were placed in jobs or who improved their performance.

It is noted that some significant changes over time has complicated the measurement. Among these are:

- major changes in plant facilities, wage rates, materials costs, product prices, or even in accounting practices;
- purchase of more fabricated components;
- addition of more automated equipment;
- increase in machine speeds without additional labour;
- expansion of capacity through technological innovation;
- change in output which cannot be quantified by the old measure.

Another complication arises because production input-output relationships are not always linear; so it is essential that productivity in such cases be measured over a long period of time.

Confusion about indirect costs and avoidable costs is another frequent mistake. Indirect input or costs (such as planning and control, product development, training, supervision, maintenance personnel) must never be ignored.

At the same time such avoidable costs as ill-designed accounting procedures; cost-allocation and overtime cannot be considered as input.

Significant errors may also be introduced when the analysts count unfinished products, or when the output has no bearing on the desired goals of the organisation, or when they measure output which does not result from the input. Analyses based on such errors are worthless.

Following are a few important characteristics that have been applied for measuring the productivity to avoid the above-mentioned problems and mistakes:

- simple and unambiguous signals to improve performance (productivity, profit, quality) ;
- break down the changes in profit to reflect the contribution from each resource used in production (labour, capital, materials, energy);
- break down the contribution to profit change from each resource into productivity terms and a price recovery term, This will isolate the effect of disparate change in product vis-a- vis resource price;
- to use the price recovery term to evaluate whether productivity loss or gain for a given resource is appropriate;
- to transform the above measures of change in profit into corresponding measures of change in profitability, change in cost per unit of output, and change in performance index numbers (e.g. productivity index numbers);
- to provide consistent signals for profit improvement regardless of the units in which the measure is expressed.

2.2.2 Implementing a measurement technique

The implementation of a productivity measurement technique involved following several steps:

- making the decision to measure productivity;
- defining the target organisational system and the required level for intervention;
- defining the measurement time period;
- selecting the measurement technique;
- using the measurement technique.

2.3 Organisational productivity measurement problems

As is the case with any organisational change, the introduction of a productivity measurement system will encounter resistance: There are a number of potential sources of concern about and sometimes even fear of productivity measurement both for managers and for workers. These include:

Potential misunderstanding and misuse of measurement: The fear of many workers that managers who are not intimately involved with the work process will exaggerate or otherwise misinterpret the changes or trends in measurement data.

Exposure of inadequate performance: Since many workers (especially white-collar) are not sure where they stand with their boss, a measurement system that would clarify the situation may pose a threat.

Additional time and reporting demands: A frequently stated fear of productivity measurement is that it will increase the paperwork and take too much time.

Reduction in staff: There are obvious relationships between productivity and the staffing level, since one of the important benefits of productivity measurement is to maintain more rational staffing. Therefore, fears will be raised that the productivity data will be used as an excuse to cut staff. In this case there will be little co-operation from workers in productivity measurement.

Reduction of autonomy: Individual staff members differ in terms of their desire for autonomy, introduction of tighter management controls-as a result of productivity measurement may be seen as a constraint.

Many of the perceived threats described above are the result of problems in the organisation that need to be understood and resolved. Implementing a productivity measurement system is an organisation of change. Changes meet resistance that seeks to maintain the status quo. Therefore, managing the introduction of productivity measurement process involves managing resistance to change.

2.4 Objective of the Study

Talking to the Executives of NPO and PSW, it appeared that there is no tool available for the local entrepreneurs to measure the productivity, identify the problems and prospects of the enterprises and diagnose the health of their enterprises. This conviction became more solid when I

personally interacted with the Executives of AB Bank, ACI Pharmaceuticals, Bangladesh Lamp, Dulamia Cottons and BOC Bangladesh Limited. It was observed that these companies do not have any tool to measure productivity level, its trend and linking wages with the value creation. Most of the entrepreneurs like to see that their enterprises are making profit or not. They are happy if the businesses return a sizable profit. In reality due to competition, the profit growth of many enterprises is shrinking. On the other hand, employees demand for more benefits. Unless this is linked with the value creation, the employer often rejects their legitimate demand.

These scenarios have prompted to go for an in-depth study of the issues related to profitability, value addition and linking this with salary & wages.

2.4.1 Broad Objective

To identify appropriate models to measure the total & partial productivities, diagnose the financial health, locate the problems and help the enterprise to set future strategies for improving the profitability.

Thus the objectives of the study were the following:

a. To study the adaptability of the models in the light of the local condition by applying the models to the local enterprises.
b. To finalise the selection of the models.
c. To identify strategies to improve the profitability and productivity.

2.5 Scope of the Study:

The study was confined to identify relevant models to diagnose the financial health of the enterprises and project the future action plans to improve profitability and productivity. The productivity can be influenced by numerous internal and external factors; the study has not considered them.

The models have been tested to only 5 enterprises which have annual balance sheets. These enterprises have been selected on judgemental basis to represent different sectors. However all the sectors have not been included in the study. It is thought, the parameters will behave in a similar fashion.

Only 3 models have been selected for identifying the total and partial productivities. There were other models, which could not be tested due to time constraints.

2.6 Limitations of the study

Each of the models has its inherent limitations. Some of the limitations are discussed below:

(a) **Value Addition (VA):** All the models have used value addition as the focal point of calculation. From value addition, all the relations are drawn. The value addition calculation however could not relate all the factors which influence it. Value addition could be changed in accordance with the automation stages of the enterprises. Similarly, it could be changed with skill level of the employees and their number. Again employee number is related with the automation stage. Value addition can also be influenced the capital/labour mix of the enterprises. More specifically, the value addition is influenced by:

i. **Persons:** Man-productivity depends on:

- Incentive plans of the enterprise
- Fringe benefits
- Job rotation
- Job enrichment
- Skill level, training
- Working condition

ii. **Group:** Man-productivity is also influenced by the group activities. The group is influenced by:

- Incentive plans
- Management style
- Management structure
- Group shared values
- Culture

iii. **Technology:** The productivity of the enterprises can be influenced by:

- Computer aided design(CAD)
- Computer aided manufacturing(ACM)
- Robotics

iv. **Government:**

- ❖ Tax and VAT structure
- ❖ Tariff structure
- ❖ Financial restrictions

(b) **Sales Revenue:** In a competitive market, the pricing of the products is a delicate issue. Value addition can be changed by the changes of the price. The price factor is determined many factors like, costing of the raw materials, getup of the products, customer choice, geographical condition, level of advertisement etc.

(c) **Capital/Labour mix:** The models have failed to relate the mix of capital and labour in improving the productivity level of the enterprises.

(d) **Strategies selection:** The models are capable to locate the future area of intervention but to address the situation; the owner or the management has to set the strategies for the overall improvement.

(e) **National index:** The productivity measured through the models can not be compared to the standard productivity of a particular sector as there is no national index on the productivity.

(f) **Sample size:** To test the models, 5 enterprises were selected on judgemental sampling. The selected enterprise may not represent the entire sector properly.

(g) **Lack of national institution:** Though National productivity Organisation (NPO) represents the Government agency, but they are not fully equipped to provide data and other logistics for the study.

2.7 Conceptual framework

The variables of the models have been studied. The variables form the integral part of the models which are mostly the financial ratios. The ratios have been integrated in the Excel programme so that graphical representation is possible.

The models have only been applied which generates annual financial figures. The projection of manpower, sales and value addition has been possible in terms of financial figures.

The model only can show the result and indicate the future course of action but it is the top management, who has the power to plan according to the projection and achieve the desired result.

2.8 Relevance of the study to country needs

Bangladesh is one of the poor countries of the world, which is fighting to alleviate poverty. Government is the largest job provider of the country. Due to pressure from International agencies, like World Bank, IMF, ADB, the government is down sizing the manpower requirement. It is the private sector should come forward to create new employment by establishing new industries and expanding the existing ones.

Due to globalisation and free economy policy of the government, the enterprises are experiencing an uneven competition with the foreign products and services. The quality level of the enterprises has yet to attain the world standard.

The study will help to understand the problems of the enterprises. If the future action plans to improve the profitability and productivity can be set by adopting models, these can be replicated to the other enterprises of the country to make them competitive and viable in the market.

Chapter 3

Methodology Of The Study

Introduction:

The methodology of the study covers the search for the relevant models that would be suitable for the local enterprises were a daunting task. This has been done by talking to the Executive of NPO and PSW and by undertaking literature survey. The literature on the productivity was not widely available. However, the publications which were available at the libraries of IBA, NPO and PSW had been surveyed along with few personal collections.

3.1 Approaches and methods

i. More than 25 books relevant to the study have been surveyed to understand and locate the suitable models. Besides, numbers of reports on the subject have been studied from the library of NPO and PSW.

ii. Collecting of the balance sheets of selected enterprises for 5 years period

iii. Computerisation of the models: To see the analysis and the graphical presentation, the structures of the models have been computerised by using MS Office Excel programme.

iv. Personal interview and interaction with the secretaries and Executives

3.2 Source of Data

Secondary data was used in the study. The models and the data were collected through:

To analyse the situation, the audited balance sheets have been used to retrieve the relevant information. To see the trends and prediction, at least 5 years data has been analysed. Few data have been collected by personal interview with the relevant authority.

To compare the result of the enterprises, data till 1999 of the enterprises have been collected.

3.3 Calculation

To avoid manual calculation, a computerised format has been developed by using Excel worksheet. This computerised format will generate the graphical outputs as well as the calculations automatically after inserting data to the input sheet. All the calculations are interlinked. So, changing one data will lead to change other data automatically.

For studying the Financial Institution, the format has been changed because the items are different in nature.

3.4 Terminology

The calculation work sheet contains certain terminology, which need to be familiarised. Following are some of the mostly used terms:

a. **Productivity:** It can be defined in two ways. In quantitative term, it can be defined as the ratio of Output and Input. The Output of an enterprise could be service (like Bank) and goods. On the other hand the input could be expressed as 6 M's, like Man, Machine, Material, Money, Market and Method.

In this study, the material for the Bank has been considered as the interest paid to the clients.

In qualitative terms, Productivity can be termed in many ways. It can be termed as the attitude to do good for the enterprise. It can be termed as to be better off today than yesterday and so on. It can also be termed as to transform the resources efficiently & effectively to maximise the output so as to expand the market and contribute to higher standard of living.

Total Productivity is the measure between the total output and total input. The Partial productivities are the ratios between the output and individual inputs.

b. **Value Addition:** It is used to see the net output of an enterprise. It can be termed as the contribution of the resources to increase the value of the output. It can be calculated in two ways. In Addition method, Value Addition is equal to Profit + Interest + tax + Labour expenses + Depreciation. The Subtraction method, the Value Addition is equal to total output minus brought out services and materials.

Chapter 4

The Productivity Models

Introduction:

Numerous models have been outlined in the literatures. Some have been utilised in the Japan, some have been in USA, and some have been in UK. Japan being the Asian country, it is thought their models will be more relevant in our local context. Only three models have been picked up from the literatures to apply them on the local enterprises. The 1st model has been utilised in Malaysia by the Malaysian Productivity Centre. The 2nd and third models have been utilised in Japan. Following are the detail description of the models:

4.1 1st Model

The first model is called Productivity Audit (Compass, 1996) which analyses the total and partial productivities. This model has been developed by the National Productivity Organisation (NPO) of Malaysia. They have successfully implemented this model in Malaysia. Under this model, total 22 productivity parameters are analysed. These are:

a. Added value per employee
b. Total Output per employee
c. Added Value per Taka of Fixed Asset
d. Added Value per Taka of Operational capital
e. Added value to Total Output ratio
f. Total Output Ratio
g. Capital per employee
h. Wage ratio
i. Labour Cost competitiveness
j. Operational profit per Taka of Operating Capital
k. Operational profit to Total output
l. Operating Profit Share in Added value
m. Labour Share in Added value
n. Capital Share in Added Value
o. % of services consumed of Total Output
p. % of services consumed in Added Value
q. Total Productivity Ratios
r. System Conversion Ratio
s. Throughput Ratio
t. Competitive Edge Ratio

u. Interest turnover
v. Unit Labour cost

The interpretations of these parameters have been attached as **annexure 'A'.**

The definition of **Value Added** has got different dimensions. The total value addition and net value addition differs by adding or subtracting the depreciation item of the company. Let's see the definition of Value addition given by different organisations:

	Formula
BOJ	Value Added = Ordinary income +Personnel costs + Financing costs + Rent + Taxes and Public imposts + Depreciation costs
MOF	Value Added = Factor costs + Net Operating income + Taxes and public imposts Factor costs = Personnel costs + Rent + Financing costs Net Operating income = Operating income – Financing costs
MITI	Value Added = Remuneration, salaries, wages and allowances + Financing cots(excluding financial investment income) + Dividends + Internal reserves + Taxes and publications
MRI	Value Added = Personnel costs + Rent + Depreciation cost +Financing costs + Taxes and public imposts + Allowances for corporate Tax + Disposable income
JDB	Net Value Added = Operating income +Personnel costs + Rent + Taxes and public imposts + Royalties Gross value Added = Net value added + Depreciation costs
SMEA	Conversion value = Production value – (Direct material costs + Cost of parts purchased + Payments to subcontractors + Indirect material costs)
Rucker	Production value = Sales – External payments = Hourly paid plant labour costs + Corporate managing costs Corporate managing costs = Owner's costs + Other operating costs Owner's costs =Interest on loans payable + Income Tax + Stock dividends + Reserves for recession and plant expansion Other operating costs = All costs other than plant managing costs and labour costs
JPC	Value Added = Net sales – [(Raw materials costs + Paid expenses + Depreciation costs) + Operating inventory – Ending inventory + Value added adjustments] Value added adjustments = Transfers to other accounts, cost variances, etc.

As per JDB, **Gross value addition** is equal to **Net Value Addition** plus **Depreciation** costs. In the study, **Net Value Addition** has been taken as Value Addition.

4.2 Second Model

The second model is called Company Performance Appraisal (CPA). This analyses the growth rate and depending upon the growth rate it also analyses the profitability and productivity ratios including other financial ratios like ROI. More specifically the model analyses the following:

a. Return on Investment
b. Growth rate
c. Primary Productivity:
   - Total Productivity Ratio
   - *Labour Productivity Ratio:*
     - Value addition per Work-hour
     - Value Addition per worker
     - Value Addition per Taka of benefit
   - *Capital Productivity Ratio:*
     - Value Addition per take of current asset
     - Value Addition per take of fixed asset
     - Value Addition per Take of plant Machinery

d. Primary Profitability Ratio:
   - Net Profit over Revenue generated
   - Net cost of services over net Revenue generation
   - Interest paid over net Sales

e. Secondary Profitability Ratio:
   - Total Asset turnover
   - Fixed Asset turnover
   - Inventory turnover

4.3 Third Model

The third model is called Value Added Productivity Measurement (VAMP), which shows how to relate manpower in relation to sales, value addition and salary. On a short term level, results of VAMP can be immediately utilised for the following:

a. Determine the Optimum number of Employee
b. Formulating a Value Added management Plan
c. Conducting a more detailed diagnosis using the Marginal profit Approach per product line/operational unit

Planned Value Added Ratio is usually set by management. It can be targeted at the current year or increased by a certain increment depending on the degree of confidence and optimisation of management.

Planned Wage increase Ratio is derived from the average annual increase of Personnel Expenses for the period under study.

Planned Labour's Share is determined as follows:

$$\text{Planned Labour's Share} = \frac{\text{Planned Personnel Expenses}}{\text{Planned Value Addition}}$$

$$= \frac{\text{(Current Personnel Exp.) x (1 + Planned annual Wage increase)}}{\text{(Planned Sales) x (Planned V.A. Ratio)}}$$

4.4 Computerisation of models

To process data of the enterprises, the models have been computerised so that one can see the trends by manipulating data. The computerisation will help to show the trends in graphical forms also to give better understanding. The data are posted to the data sheet. All the calculations (value addition productivity ratios, graphical presentation, CPA, Optimum manpower etc.) are linked and produce the result automatically. The blank data sheet is shown as **annexure 'B'.**

Chapter 5
Name And Brief Description Of The Enterprises Studied

Introduction:

The following enterprises have been selected among the big enterprises of the country representing different sectors:

a. AB Bank Limited, representing Financial sector
b. ACI Limited, representing Pharmaceutical sector
c. Bangladesh Lamp Limited, representing Electronics sector
d. Dulamia Cotton Limited, representing Textile sector
e. Bangladesh Oxygen Limited, representing Utility sector

5.1 Arab Bangladesh Bank Limited

Arab Bangladesh Bank Limited started its journey from 12th April 1982. It incorporated in Dhaka on 31st December 1981. Mr. M. Matiul Islam and Mr. Hafizul Islam were the first Chairman and Managing Director respectively. The joint venture Bank started its function with the active participatior of Dubai Bank Limited. Galadari brothers were the main shareholders. In 1986, the Union Bank of the Middle East Limited inherited the shares of Dubai Bank Limited and continued as shareholders till early part of 1987, when they decided to offload their investment in Bangladesh and concentrate their activates in the U.A.E. In terms of Articles 23(a) and 23(b) of the Articles of Association of the company and with the necessary approvals of the relevant authorities including Bangladesh Bank, the shares held by them in the company were transferred to Group "A" shareholders i.e. Bangladeshi sponsors & shareholders.

At present the authorised and paid up capital of the Bank are 800.00 million and 409.94 million respectively. The sponsors and general shareholders 95% of the share capital of the Bank and 5% by the Government of the Peoples Republic of Bangladesh.

Since it's beginning, the Bank has been rendering high quality services in different areas of banking and able to win confidence of the public through excellence of services, professional competence and employment of the state of the art technology. During the last seventeen years, Arab Bangladesh Bank Limited has 62 branches operating in different business centres of the country, one foreign branch in Mumbai and two Representative Office, one in London & other in Yangon,

Myanmar. The Bank is operating successfully its wholly owned subsidiary named AB International Finance Ltd. in Hong Kong.

The bank do not have productivity programme. The Executrices have engaged consultants to suggest their future course of action as the company is loosing manpower to the newly opened banks. They also thinking to start performance related pay package and incentives.

5.2 ACI Limited

ICI Bangladesh Manufacturers Limited, a Public Limited Company changed its name to Advanced Chemical Industries Limited (ACI) on 5th May 1992. The main objective of the company is to manufacture pharmaceutical products, agrochemicals and public health products and to market them along with other consumer brand items.

The company has a vision to play a leading role in improving the quality of life and well being of the people of Bangladesh through responsible application of knowledge and skills.

The authorised capital of the Company is 500 million and the paid up capital is Tk. 161.70 million respectively.

Being the participants of the NICC programme, the company has started measuring total and partial productivities of major items including the trend analysis

5.3 Bangladesh Lamp Limited

Bangladesh Lamps Limited is a public Limited company incorporated in 1960 in Bangladesh under the Companies Act 1913. The Company has an authorised capital of Tk. 500 million divided into 5 million ordinary shares of Tk. 100 each. The shares of the Company are publicity traded on the floors of Dhaka and Chittagong Stock Exchanges.

The entire shareholding of Phillips Holland was sold and transferred on 4th March 1993 to Transcom Limited, a company incorporated in Bangladesh, thus making the Company a subsidiary of Transcom Limited. The balance 40% shares are held by the general public including foreign investors.

The Company produces and sells electric bulbs.

The Shareholders' equity of the Company is Tk. 174.884 million, out of which Tk. 72.081 million raised through Share Capital.

The company is practicing to find out the major financial ratios but not the productivity ratios.

The factory is located at Sadar Road, Mohakhali, Dhaka-1206 and the Head Office is located as BSEC Bhaban(7th floor), 102, Kazi Nazrul Islam Avenue, Kawran Bazar C.A., Dhaka-1215

5.4 Bangladesh Oxygen Company (BOC) Bangladesh Limited

BOC Bangladesh Limited is both old and a relatively new company. Old because it has been present in what is now Bangladesh, in one form or the other, since the days of British India. New, because it was registered under its own identity only in 1973. The Company began, after the independence of Bangladesh, with a modest turnover of a little over Tk 6 million. The turnover in 1998 was almost Tk 843 million.

BOC Bangladesh Limited started functioning as Bangladesh Oxygen Limited with 3 small Oxygen plants and 3 Dissolved Acetylene plants, one of each in Dhaka, Chittagong and Khulna. In addition, it had an operating contract to run the Oxygen plants of Chittagong Steel Mills (CSM), which is still there today. For the manufacture of Welding Electrodes the Company had only one very small extruder. From inception, the Company has remained the sole supplier of Medical Oxygen in the Country. In the mid 70's a Nitrous Oxide plant still the only one in Bangladesh, was imported and installed in Dhaka to provide the nation with this vital anaesthetic gas. Later in the decade a Carbon Dioxide plant was bought and installed in Dhaka and this was the first in the country to produce dry ice. In the early 80's the first liquid gas plant was imported from New Zealand and again installed in Dhaka, where the demand for Oxygen was concentrated. Shortly after that came the first boom in ship-cutting and demand for Oxygen "went through the roof."

The enterprise analyses financial ratios and try to act accordingly. They have not tried to utilise other means to diagnose the financial health.

5.5 Dulamia Cotton Spinning Mills Ltd.

The company was incorporated in Bangladesh on 28th February, 1987 as Public limited Company under Companies Act 1913 and started commercial production in 18th January 1990 for unit-I and 1st April, 1993 for unit-II. Since 1989 its shares are listed on the Dhaka Stock

Exchange Ltd. and since 1995 its shares are listed on the Chittagong Stock Exchange Ltd.

The principal activity of the Company is to import raw cotton and manufacture different count of yarns through the cotton spinning mills situated at Dagonbhuiyan Thana, District-Feni. Marketing of the products is undertaken by the Company through agents.

Company's registered office is at Anchore Tower, 1/1, (B) Sonargaon Road, Dhaka-205.

The company do not practice productivity or any modern tools to enhance its profitability.

Chapter 6
Productivity Improvement Strategy

Introduction:

A sound productivity improvement strategy calls for a systems approach to productivity improvement which recognises the inter-relationships between the elements of the system and their environment. It defines the performance of the system and maintains equilibrium while effecting change.

Guide-lines for a good strategic approach were given by **Stephen Moss** as follows:

Translate competitive requirements into specific goals for operations in the light of the present and potential operating strengths and weaknesses of the company and its competitors.

Review and rethink the entire operating system from product design through service after sale. Consider the full range of inputs, and do not be constrained by conventional wisdom, ' always keep. in mind the, interdependencies within the system.

Assume ongoing change is both inevitable and desirable. New technologies become available, market requirements and resources change, and competitors act and react. Therefore, the system must be innovative and flexible so it can improve and adapt continually.

Thus, productivity strategy is the pattern of decisions in the enterprise that determine its objectives, procedures and principal policies and plans for achieving long-term productivity improvement goals. A good productivity improvement strategy should, as a minimum:

- develop a clear and easily communicated definition of the productivity improvement concept;
- explain why organisational improvement is important;
- evaluate current operating status and the reasons for the current status;
- develop models of excellence ;
- develop improvement policies and plans;

Organisations with clear productivity concepts should identify clear goals and objectives.

The objective of productivity improvement should always be expressed in terms of organisational "improvement" in recognition of the past and current success of the divisions and subsidiaries within 'an organisation, Some of the

individuals. Finalise detailed activity lists showing implementation procedures.

Step 4 : Eliminate known barriers to Correct visible defects in the productivity operations such as:

- capacity bottle necks;
- wasteful repetitive work
- elements and cost expenditure.

Step 5 : Develop productivity: Choose productivity measures for the measurement methods and set of goals systems. Use them to calculate the base-period productivity indices. Use them for comparisons in the future.

Step 6 : Execute action plan. Introduce changes which promise a substantial increase in productivity in the existing projects. Focus attention on priority action items with quick potential results. Concentrate on short, visible, urgent, and easily achievable activities and , goals (the level of effort should be in proportion to anticipated returns). Start step-by-step periodic measurement and reporting.

Step 7 : Motivate workers and Train workers in identifying managers to achieve higher constraints and in problem-solving productivity. Reduce fear of change through planning, advance training and l education. Give appropriate recognition to workers and supervisors for the best group results. Keep full workload for workers during the day. Encourage workers' participation in the productivity drive (productivity and quality circles, consultative committees, etc.).

Step 8 : Maintain the momentum of never allow relaxation after productivity efforts completing a project. Be ready to start new productivity projects one after the other.

Step 9 : Keep monitoring the Provide for mutual trust between organisational climates workers and their supervisors. Maintain high quality of measurement procedures. Generate regular reports on costs and quality of production. Provide continued interest and support to operating managers and staff specialists in productivity effort

6.2 Managing organisation effectiveness

One should not attempt to accomplish several major productivity projects simultaneously. No one should also ignore the perpetual need for training of workers and supervisors. These steps are to be considered only as a kind of check-list, which could and should be expanded or reduced depending upon specific tasks and circumstances. All productivity programmes operate in organisations, and to run them a productivity programme manager must be able to suggest processes that managers and workers can use to identify problems, to work out and implement solutions. The in-enterprise productivity processes include suggestion systems, quality circles, task forces; action teams productivity committees and steering committees. These should all be fully understood and used by the productivity programme manager.

6.3 Major management responsibilities

The main management responsibilities in a productivity drive are to identify the objectives, to set up a productivity improvement programme and to establish a productivity measurement system.

(a) Identifying the objectives

To start any productivity improvement programme, management has to identify the area where improvement is necessary and achievable, and also identify the specific elements of productivity that are critical to the enterprise's operation -quantity, quality, customer satisfaction, or other elements.

(b) Setting up a productivity improvement programme

The structure of the organisation must be carefully examined in order to identify the changes to be aimed at by the productivity improvement programme. In spite of the differences in enterprise goals and approaches, a general check-list for establishing a productivity improvement programme can be suggested:

i. Top management has a key role in determining the need for a programme and initiating it, in the development and adoption of a productivity improvement policy.

ii. A team, which includes all parties concerned, has to be formed. Outside consultants may be called in.

iii. Depending on the size of the enterprise, a small unit can see established to carryon a productivity programme. A special co-ordinator can be named from functional or top management staff.

iv. Educating management and supervisors in productivity improvement is crucial. The key people involved in implementing the programme will need training sessions covering the concept of productivity, how to measure it. And the tools and techniques for improving it. Productivity management

v. Personnel at all levels should be involved through group meetings and informal discussions at the plant, departmental or office level. Joint labour-management committees can be established. Continuous communication through existing information channels is essential.

vi. The programme should provide for periodic review and evaluation of results. This requires the establishment of measures and goals for each, organisational unit. Immediate visible goals can be set, such as improving of quality, reducing scrap, saving energy, increasing output, increasing safety, reducing tardiness, turnover and absenteeism, and giving rewards. Periodic reports must be provided to identify units with below-standard performance so as to serve as a basis for rewarding improved achievement.

vii. It is vital to raise the awareness level within the organisation of all the factors that will influence productivity and of the system for improving it.

(c) Establishing a productivity measurement system

One of the important steps in productivity improvement is establishing a productivity measurement system within the enterprise. This in itself brings some improvement in performance by making people more aware of the meaning of productivity. The following advice could be useful in setting up the measurement system:

a. Determine the elements of the enterprise that most need to be monitored.
b. Determine the types of measure to be used.
c. Select preferred concepts and units of measurement for the output and input of the company as a whole, and for the critical sub-activities.

d. Ascertain the availability of data and make necessary compromises.

e. Select a pilot activity, section or group within the organisation, and test the measurement system to obtain periodic feedback on the results.

f. Assess the system's value, make any modifications and conduct a new pilot activity if the modifications completely change the original system design.

g. A measurement system must consider cost effectiveness, the limitations of productivity measurement and whether total factor measurement is necessary; in other words, it must determine the range and terms of the measurement system tasks.) must be easy to use and serve to identify the reasons for the organisational changes.

These general considerations on productivity management help us to identify the so-called organisational meta-structure of a productivity improvement process. Every given method of productivity improvement covers:

6.4 Force field analysis

A useful technique for helping managers understands the change process is force-field analysis (Joseph Prokopenko). This is a process of analysing the forces for and against a change in behaviour by an individual or a group.

The analysis is a four-step process:

Step 1: Define the desired outcome of a productivity measurement system.

Step 2: Identify the "pressure" items working for and against achieving the desired outcome. Usually it shows a wide gap between the perceptions of management and the workers. While the measurement system appears positive to the management, it will be strongly resisted by the latter:

Step 3: Select the most important items from the forces for and against.

Step 4: Develop a plan for increasing the forces for and decreasing the force against.

The success of the productivity measurement will depend to a great degree on how effectively the division manager can decrease the forces against the change and increase the forces for it and decreasing the forces against measurement.

The strategy for intervention should concentrate first of all on minimising the opposing forces since any increase in the driving-force would provoke strong counter pressures from negative forces. One of the effective methods of decreasing negative forces is to involve managers and workers in designing and implementation the measurement process. This can build a sense of ownership and help change perceptions. This process should be coupled with a participatory planning process shared information and accountability.

Increasing the forces for measurement

One implementation strategy to increase positive forces is to share previously undisclosed business information. This will create sense of trust, educate subordinates to economic realities, and suggest that survival of the organisation and job security depends on maintaining effectiveness.

Another strategy is to develop and communicate a collective vision of the organisation's objectives and values; A shared organisational philosophy plays an important role in directing the diverse values of members towards a common purpose. One such approach is a strategic productivity planning process that involves organisation members at all levels in defining future organisation goals, A logical part of this process is the development of a measurement system.

Positive forces can be developed through top management leadership. By means of their behaviour, top managers should communicate that productivity is important and explain why, They should require lower-level managers to prepare productivity measurement plans, which would make them responsible for this process,

When a sound productivity measurement system is built into an organisation as an integral part or the whole management system, productivity improvement effort should have a very positive effect on the organisation's performance.

6.5 Models for Recommendations:

For locating the future areas of intervention, we need to see the relationship between profitability and productivity. We also need to study the productivity improvement factors.

Profitability and Productivity:

Profitability and productivity are linked directly. The relation can be shown by the following formula (Joseph Prokopenko, 1987):

Output value	=	Quantity sold	x	Unit price
↓		↓		↓
Profitability	=	Productivity	x	Price recovery
↑		↑		↑
Input value	=	Quantity used	x	Unit cost

Considering the relationships over time, profitability is defined as change in output value compared with change in input value; productivity as the change between quantity of output and the quantity used, the price recovery is the change between the unit price, and unit cost.

If an enterprise wants to increase its profitability, it has two options: increase the price recovery factors and productivity. Increasing the price may sound good but practically it will be worse proposition in a competitive marketing situation. One can try to reduce the costs to get extra edge in the price recovery factor. As this is an internal factor, the entrepreneur can drive. The proposition of cost reduction becomes more difficulty in the enterprise, which are dependent on imports of their raw material and other items. Due to money devaluation effect, the cost is going up in each year.

So, the easiest way and may be the best option is to increase profitability is by increasing the productivity. The increase in productivity can be achieved in two ways: by increasing the outputs with same input or keeping the output same and decreasing the inputs by reducing wastage.

6.6 Productivity Improvement Factors

Productivity improvement is not just doing things better; more importantly, it is doing the right things better. The production process is a complex, adaptive, on going social system. The inter-relationships between labour, capital and the socio-organisational environment are important in the way they are balanced and co-ordinate into an integrated whole. It is important to note that one has to distinguish three main productivity factors groups:

- Job related
- Resource related;
- Environment related.

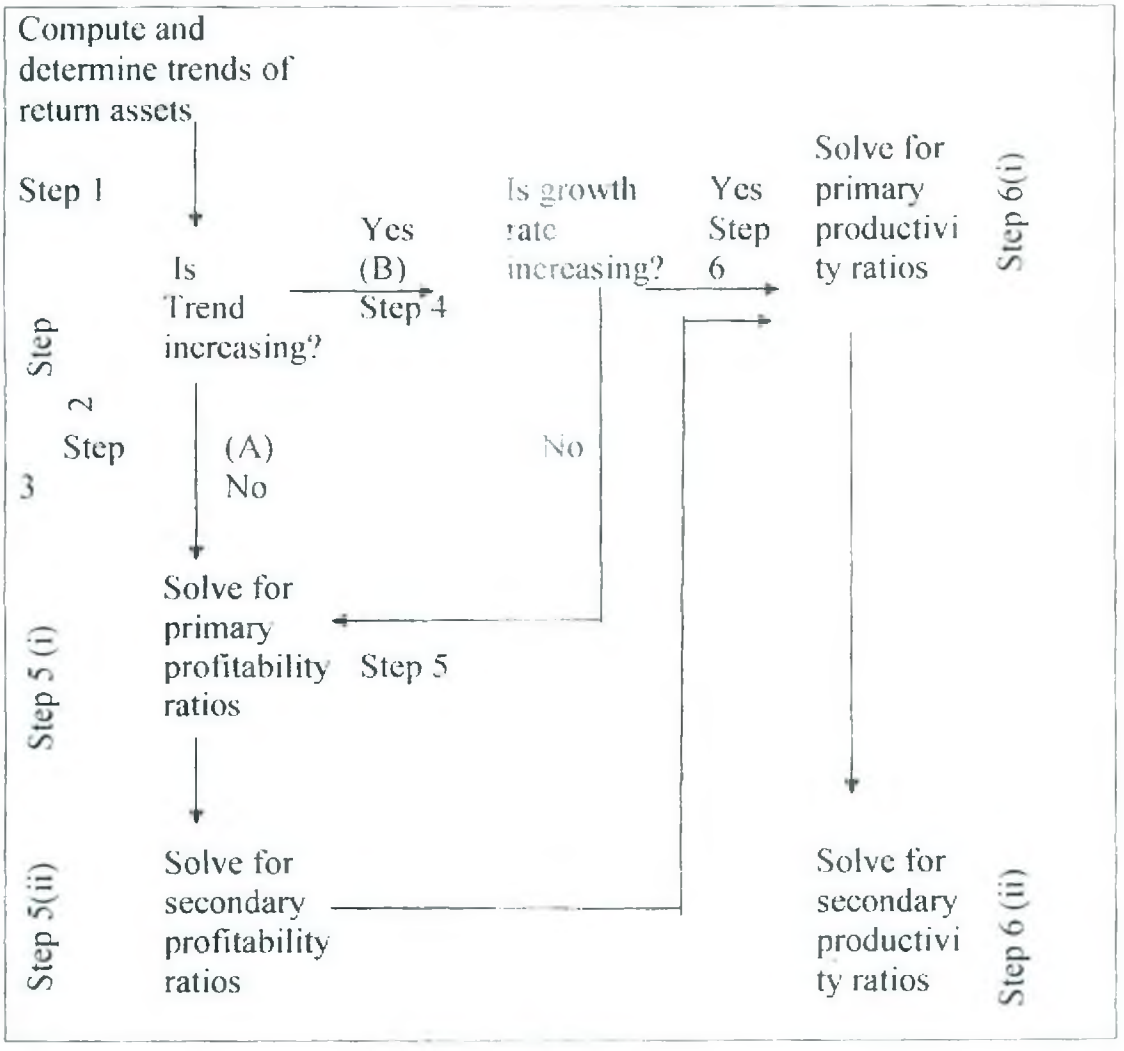
Since our main concern here is the economic analysis of managerial factors rather than productivity factors as such, we suggest a classification, which will help mangers distinguish these factors, which they can control. In this way, the number of factors to be analysed and influenced decreases dramatically. The classification suggested here be as follows:

There are two major categories of productivity factor:

- External (not controllable by the individual enterprise)
- Internal (controllable by the individual enterprise)

6.7 Techniques for Recommendations:

The Productivity Audit model (1st model) indicates that considering the implications, one has to take action. The Company performance Appraisal (CPA) model shows the following way to locate the intervention area:



The ideal combination of cases can be elaborated by the following table, which describes the relationship between profitability and productivity and the action to be taken by the enterprises (Joseph Prokopenko, 1987):

Case	IF		THEN	
	Profitability	Productivity	What will happen	What should be done
1.	HIGH	HIGH	Financial condition will be sound and stable	Maintain or increase productivity further
2.	HIGH	LOW	High profitability may not be sustained on a long-term basis. IN the long run, low productivity will eat up profits	Improve productivity
3.	LOW	HIGH	The company may soon be operating at a loss and may be on the brink of a shut down	Improve profitability, strength market strategy, market research, market promotion/advertising, and price policy
4.	LOW	LOW	Shut down/bankruptcy	Improve productivity and strengthen market

So, the value addition of the enterprises has to be increased so that the concerned parties (Customers, Employers and employees) get larger share of the benefits derived out of the productivity.

Chapter 7
Analysis and Findings

Introduction:

Three models have been applied to the five enterprises to see their total, partial productivities and the relation among the value addition, manpower number and sales revenue. The financial analyses of each of the enterprises have been shown in the annexure 'C' to 'G'. The interpretations and the result of the analyses have been outlined below:

7.1 Arab Bangladesh Bank Limited

Outcome of the 1st model: 22 parameters:

The Productivity and Profitability of the Bank is decreasing since 1996. Among these last six years, these trends were only positive during 199[illegible].

The Productivity index was 1.22 in 1996. It was 1.15 in 1997, 1.14 in 1998 and further decreased to 1.11 in 1999.

The Growth rate has a negative trend since 1996. It was –28.32% and –6.64% during 1997 and 1998 respectively. It came down to – 13.00% during 1999.

The Return on Investment (ROI) was 1.54% in 1996. It decreased to 1.11% in 1997 and 1.03% during 1998 and 0.90 during 1999 respectively.

The Operating profit was lowest in 1995, which was 8.30%. It increased to 17.71% in 1996, but decreased to 13.29% in 1997, 11.94% in 1998 and further decreased to 10.17% in 1999.

The Value Addition has reached to Tk. 433,680,890.00 during 1999, which is the highest among these 5 years. Per employee value addition is also the highest during 1999. The question may arise now, how the profitability and productivity trends are negative. The reasons might be contribution of the overhead costs that has added to the input (cost) to reduce the profitability and productivity.

2nd Model: Company Performance Appraisal (CPA):

1. The ROI (Return on Investment) was highest in 1996, which was 1.54% and it decreased to 1.03% in 1998 and 0.90 in 1999 respectively.

2. The growth rate is negative during the last two years. The growth rate was – 28.32% during 1997 and was –6.80% in 1998 and –13.00 in 1999 respectively.

3. The total productivity of the Bank has been decreasing over the years. It was highest in 1996, which was 1.22 and decreased to 1.11 in 1999.

4. The primary productivity ratio indicates that per hour Labour Productivity has been increasing over the years. It was Tk. 104.39 in 1997 and reached to Tk.117.34 in 1999

5. The value addition per hour of salary and wages shows a negative trend. The value addition is decreasing in relation to salary and wages.

6. The Capital Productivity shows a mixed trend. The trend of Value addition in comparison to Total Asset appears negative, though value addition in terms of fixed asset shows a slight positive trend in 1999.

   The Value Addition to Fixed Asset decreased to 1.94 in 1999 from 2.90 in1996.

   The Value Addition per Taka of Current Asset decreased from Tk. 0.035 in 1996 to 0.0311 in 1997 and decreased to 0.0308 in 1998 and further decreased to 0.0287 in 1999.

   So the high increase of Asset has offset the productivity gain by the employee.

7. The primary profitability figures show that the Profitability scenario has been decreasing over the last 3 years. It was highest in 1996, which was 17.71%. The value decreased to 11.94% in 1998and 10.17% in 1999 respectively.

   The total cost of services (COGS) was 52.36% in 1996. It was highest in 1994, which was 60.15%. The rate increased to 57.21% in 1998 and 61.03% in 1999 respectively.

   The Admin and other costs have been increasing over the years. The cost was Tk. 292 million in 1996 and increased to Tk. 357 million in 1998 in 389 million in 1999.

   The rent rates taxes figure has been increased by 3.5 million during the last year. The Depreciation has increased by 4 million and the other expenditures have decreased by 2 million during 1999.

3rd model: Optimum Manpower Sales volume and Wage Rate

This model is capable of forecasting the future parameters based upon the present parameters, like desired sales target, number of manpower, labour share etc.

The Return on Investment (ROI) was 5.55% in 1997, 9.30% in 1998 and 8.35% in 1999 respectively.

The Net profit was lowest in 1996, which was 2.21%. It increased to 7.03% in 1998, but decreased to 6.23% in 1999 respectively.

The Value Addition has reached to Tk. 578,705,089.00 during 1999, which is the highest among these 5 years. Per employee value addition is also the highest during 1999. The question may arise now, how the profitability and productivity trends are negative. The reasons might be contribution of the overhead costs that has added to the input (cost) to reduce the profitability and productivity.

2nd Model: Company Performance Appraisal (CPA):

The ROI (Return on Investment) was highest in 1998, which was 9.30% and it decreased to 8.35% in 1999.

1. The growth rate started to show negative trend from 1999. The growth rate was highest during 1997, which was 171.48%. It was 67.66% during 1998 and reached to – 10.29% during 1999.

2. The total productivity of the Company started to decrease from 1998. It was 1.14 and decreased to 1.12 in 1999.

3. The primary productivity ratio indicates that per hour Labour Productivity has increased in 1999., which is Tk. 276.21. It was Tk. 231.50 during 1998.

4. The value addition per hour of salary and wages shows a positive trend during 1999, which is Tk. 4.14. The value addition was negative in 1998.

5. The Capital Productivity shows a mixed trend. The trend of Value addition in comparison to Total Asset appears negative, though value addition in terms of fixed asset shows a slight positive trend in 1999.

   The Value Addition to Fixed Asset increased to 2.78 in 1999 from 2.16 in1998.

   The Value Addition per Taka of Current Asset decreased from Tk. 0.84 in 1997 to 0.80 in 1998 and increased to 0.84 in 1999.

   So, the increase of Asset has offset the productivity gain by the employee.

6. The primary profitability figures show that the Profitability scenario has decreased during 1999. It was highest in 1998, which was 7.03%. The value decreased to 6.23% in 1998.

The total cost of goods sold(COGS) was 70% in 1996. It was lowest in 1994, which was 67%. The rate increased again to 70% in 1999.

The Admin and other costs have been increasing over the years. The Admin and Selling cost was Tk. 139.96 million in 1996 and increased gradually to Tk. 263.52 million in 1999.

The Admin expenses other than salary and benefits have increased from 138.625 million in 1998 to 165.39 million in 1999. The Depreciation has increased by 11 million in 5 years time.

3rd model: Optimum Manpower Sales volume and Wage Rate

Te outcome of the 3rd model is as under:

Scenario A

Based upon the 1999 figure, if the value addition ratio is 48.35% and the labour share ratio is 43.91% and if the wage rate increase is 1.11% only per year, the company has leverage to recruit more people(3941 persons in the year 2004). This indicates, due to less increase in the wage rate, the company will enjoy better leverage in the future.

Scenario B

Assuming last four years sales growth (Av. 21.26% per year) and the salary growth rate (Av. 1.11% per year), the labour share will decrease to 9.73% of the value addition from 43.91 % as on 1999. Under this condition, the company is in a good condition in terms of sales target fixing. Even if the sales target drops @ 10.30%, it will have no problem to bear the wage burdens.

Scenario C

If the Labour Share percentage and the value addition remain same level over the years (43.91% and 48.25%), the company has the leverage to increase the wage rate by 36.68% p.a.

7.3 Bangladesh Lamps Limited

Bangladesh Lamps was the 3rd company to study. It is the biggest bulb manufacturing company of the country.

Outcome of the 1st model: 22 parameters:

The Productivity and Profitability of the Company is decreasing since 1995. The net profit was highest during 1995, which was 17%. It decreased to 11% in 1997 and decreased to 5% in 1999.

The Productivity index was 1.04 in 1999. It was 1.21 in 1995, 1.18 in 1998 respectively.

The Growth rate has a negative trend since 1995. It was –8.06% in 1996, -36.89% in 1997, -21.12% in 1998 and –76.14% during 1999 respectively.

The Return on Investment (ROI) was 25.07% in 1995. It decreased to 14.55% in 1997 and 11.47% during 1998 and 2.74% during 1999 respectively.

The Operating profit was lowest in 1999, which was 5.68%. It was 17.25% in 1995, but decreased to 8.41% in 1997. It increased to 21.66% in 1998 and again decreased in 1999.

The Value Addition has reached to Tk. 225,201,345.00 during 1997, which is the highest among these 5 years. Per employee value addition is also the highest during 1997. It started to decrease since then. It was negative in 1998 and moved to Tk. 49,216,055.00 in 1999.

2nd Model: Company Performance Appraisal (CPA):

The ROI (Return on Investment) was highest in 1996, which was 1.54% and it decreased to 1.03% in 1998 and 0.90 in 1999 respectively.

1. The growth rate shows negative trend over the years. The growth rate was –8.32% during 1996 and was –36.89% in 1998 and –76.14 in 1999 respectively.

2. The total productivity of the Company decreased from 1995 to 1997. It improved slightly during 1998, which is 1.18, but again dropped to 1.04 in 1999.

3. The primary productivity ratio indicates that per hour Labour Productivity increased till 1997 and doped to Tk. 183.10 per hour in 1999. It was highest in 1997, which was Tk. 823.83.

4. The value addition per hour of salary and wages shows a positive trend till 1997. The value addition started to decrease and reached to -2.64 in 1998 and improved to Tk. 1.52 in 1999.

5. The Capital Productivity shows a similar scenario. It was negative in 1998 and improved slightly in 1999.

   The Value Addition to Fixed Asset increased from 2.14 in 1995 to 4.68 in 1997 and decreased to -2.21in 1998 and to 0.21 in 1999.

   The Value Addition per Taka of Current Asset increased from Tk. 0.85 in 1995 to 01.02 in 1997 and decreased to -0.37 in 1998 and slightly increased to 0.19 in 1999.

6. The primary profitability figures show that the Profitability scenario has been decreasing over the last 5 years. It was highest in 1995, which was 17%. The value decreased to 9% in 1998 and 5% in 1999 respectively.

   The total cost of services (COGS) was 78% in 1995. It was highest in 1999, which is 79%. The rate decreased to 72% in 1997 and since then started to increase. This has offset the profitability scenario.

   The Admin and other costs have increased till 1997 and then decreased to Tk. 5,756,916 in 1999.

   The repair and maintenance cost Tk. 3.4 million in 1995 but increased to 8.6 million in 1999. The high maintenance cost has increase the Cost of Goods sold.

3rd model: Optimum Manpower Sales volume and Wage Rate

Te outcome of the 3rd model is as under:

Scenario A

Based upon the 1999 figure, if the value addition ratio is 22.57% and the labour share ratio is 18.66% of the value addition. The manpower has to be reduced to only 17 if the salary and wages increase @ 6.43% per annum in 2004 to retain the present profitability figure. This decrease might not be possible to run the factory.

Scenario B

Assuming last two years sales growth (Av. -11.70% per year) and the salary growth rate (Av. 6.43% per year), the labour share will be 122.79% of the value addition. It means the value addition will be exhausted to meet up the salary and wages. To keep the same value addition and Labour share as of 1999, the sales volume to be increased by 28.72% per year, i.e. Tk.1048 million at the end of 5 years time.

Scenario C

If the sales growth rate and the value addition remain same level (-11.70% and 22.57%), to retain the present manpower, the wage rate has to be decreased by -27.24% per year.

7.4 BOC Bangladesh Limited

BOC Bangladesh Limited is the 4th company to study.

The Productivity and Profitability of the Company are positive, which proves the soundness of the company. This should be condition of others. This company could be the model to follow.

The Productivity index was 1.15 in 1997. It was moved to 1.16 in 1998 and moved further to 1.23 in 1999.

The Growth rate was negative trend till 1997. The growth rate was 28.61% in 1998 and down to 18.55% in 1999.

The Value Addition has reached to Tk. 447,534,000.00 during 1999, which is the highest among these 5 years. Per employee value addition is also the highest during 1999.

2nd Model: Company Performance Appraisal (CPA):

The ROI (Return on Investment) was highest in 1995, which was 14.60% and it decreased to 7.62% in 1997 and increased to 11.61% in 1999.

1. The growth rate was negative during the period 1996-97. The growth rate was -6.68% during 1997 and moved to 28.61 % in 1998 but down to 18.55% in 1999.

2. The total productivity of the Company has been increasing since 1997. It was 1.15 in 1997 and moved to 1.16 in 1998 and further moved to 1.23 in 1999 respectively.

3. The primary productivity ratio indicates that per hour Labour Productivity has been increasing over the last 3 years. It was Tk. 192.77 in 1997 and moved to Tk. 372.77 in 1998 and moved to Tk. 3460.43 in 1999 respectively.

4. The value addition per hour of salary and wages shows that it was Tk. 1.81 in 1997 and moved to Tk. 3.40 in 1998 and further moved to Tk. 4.86 in 1999 respectively.

5. The Capital Productivity shows a mixed trend. The trend of Value addition in comparison to Total Asset was negative till 997 and shows a positive trend till 1999. It was Tk. 0.32 in 1999.

   The Value Addition to Fixed Asset decreased shows a similar figure. It decreased in 1997 and then started to rise. It reached to 0.41 in 1999.

   The Value Addition per Taka of Current Asset has also the same feature. It was Tk. 0.71 in 1997 and increased to Tk. 1.49 in 1999.

6. The primary profitability figures show that the Profitability scenario decreased till 1997, which was 10%. It increased to 16% in 1999.

   The total cost of services (COGS) was 65% in 1996 and 1997. It decreased to 62% in 1998 but increased to 63% in 1999.

   The operating expense percentage as against Net Sales shows it was highest in 1998, which was 24%. But, it decreased to 18% in 1999, which is a good sign for the company.

   The Admin and other costs have been increasing over the years. The cost was Tk. 139 million in 1997 and increased to Tk. 163 million in 1999.

   The Factory over head was highest in 1997, which was 123 million. It decreased to 74 million in 1999. The repair and maintenance cost has decreased from 35 million to 32 million in 1999.

   The Depreciation has been increasing over the years. It was 62.46 million in 1997 and increased to 77.51 million in 1999.

3rd model: Optimum Manpower Sales volume and Wage Rate

Te outcome of the 3rd model is as under:

Scenario A

Based upon the 1999 figure, if the value addition ratio is 43.79% and the labour share ratio is 16.04%, the company has a leverage to increase the manpower to 761 in 2004 from 405 in 1999 as the salary growth rate is negative. But if we consider increasing the salary and wages by 5% p.a., the company will be able to increase manpower to 478 in 2004.

Scenario B

Assuming last four years sales growth (Av.14.10% per year) and the salary growth rate (Av. -4.32% per year), the sales volume to be increased by 1.40% per year, i.e. Tk.1095.535 million in the year 2004 from 865.53 million in 1999, But with 5% salary enhancement per year, the target sale will be 11.28% per annum and that will require 1744.06 million in 2004.

Scenario C

If the sales growth rate and the value addition remain same level(14.10% and 43.79%), the company has the leverage to increase the salary and wages by 8.55% per annum.

7.5 Dulamia Cotton Spinning Mills Limited

Dulamia Cotton Spinning Mills Limited was the 5th company to study which represents the Textile sector.

Outcome of the1st model: 22 parameters:

The Productivity and Profitability of the Company are increasing since 1997. The interesting feature of the company is that though these parameters are showing positive but the profitability is below the break even point. It's profit is moving towards break even. The trend is positive. The profit before tax and interest was positive. The huge interest figure has brought down the profit to negative figure. The productivity is increasing, which is a good sign. But until the company generates sustainable profit, it's existence will be at stack.

The Productivity index was 1.07 in 1997. It moved to 1.13 in 1998 and further moved to 1.15 in 1999 respectively.

The Growth rate has a positive trend since 1998. It was 12.16% in 1998 and moved to 62.21% in 1999 respectively.

The Return on Investment (ROI) was -17.23 in 1996. It increased to -15.14% in 1998 and -5.72% during 1999 respectively.

The Operating profit was lowest in 1997, which was -27.72%. It increased to -22.79% in 1998 and further increased to -8.63% in 1999.

The Value Addition has reached to Tk. 34,011,112.00 during 1999. It was highest in 1998, which is Tk. 44,615,106.00

2nd Model: Company Performance Appraisal (CPA):

The ROI (Return on Investment) was highest in 1996, which was 1.54% and it decreased to 1.03% in 1998 and 0.90 in 1999 respectively.

1. The growth rate was negative during 1996 and 1997. The growth rate was -24.56% in 1996 and -14.24% in 1997. It moved to 12.16% in 1999 respectively.

2. The total productivity of the Company has been increasing from 1997. It was 1.07 in 1997 and moved to 1.13 in 1998 and further moved to 1.15 in 1999.

3. The primary productivity ratio indicates that per hour Labour Productivity has a mixed trend. It was highest in 1998, which is Tk. 20.86 per hour. It was lowest in 1997, which is Tk. 14.78. It was Tk. 16.09 in 1999.

4. The value addition per hour of salary and wages also shows a mixed trend. It was highest in 1995, which was Tk. 2.22 per taka of salary and benefits. It dropped to Tk. 1.46 in 1997 and moved to Tk. 2.00 in 1998 but dropped to Tk. 1.59 in 1999.

5. The Capital Productivity shows a mixed trend. The trend of Value addition in comparison to Fixed Asset shows a negative trend from 1995 to 1997. It was 0.18 and down to 0.14 in 1997. It moved to 0.23 in 1998 but again down to 0.19 in 1999.

   The Value Addition per Taka of Current Asset also shows a similar pattern. I was Tk. 2.47 in 1995 and decreased to Tk. 0.36 in 1997. It increased to Tk. 0.55 in 1998, but down to 0.36 in 1999.

   The Value Addition to total Asset has also the similar pattern. It deceased till 1997 and increased in 1998 and again decreased in 1999.

6. The primary profitability figure shows that the Profitability scenario has been decreasing over the last 3 years. It was highest in 1996, which was 17.71%. The value decreased to 11.94% in 1998 and 10.17% in 1999 respectively.

   The total cost of services (COGS) was 88% in 1997. The trend since then shows a negative trend and reached to 83% in 1999, which is a good sign.
   The Factory overhead is increasing in a faster rate over the years. It was 12.41 million in 1997 and moved to 30.29 million in 1999.

The Depreciation has increased from 3.29 million in 1996 to 19.76 million in 1997. It was 16.36 million in 1999.

3rd model: Optimum Manpower Sales volume and Wage Rate

Te outcome of the 3rd model is as under:

Scenario A

Based upon the 1999 figure, if the value addition ratio is 18.37% and the labour share ratio is 13.68%, the manpower has to be reduced to 126 in 2004 to retain the present profitability figure. This decrease might not be possible because of the present technological status of the company

Scenario B

Assuming last two years revenue growth (Av. 1.80% per year) and the salary growth rate (Av. 4.99% per year for the last three year), the sales volume to be increased by 41.04% per year, i.e. Tk.997.16 million in the year 2004 from 195.37 million in 1999, which would be a challenging one. Other wise the company has to pay 76.22% of the value addition to the employee as benefits.

Scenario C

If the sales growth rate and the value addition remain same level (1.80% and 18.37%), to retain the present manpower, the wage rate has to be decreased by -24.22% per year.

A combination of the above scenario may be worked out.

7.6 Findings of the study

The economic condition of the country is dependent upon the development of the local enterprises. Due to globalisation and government policy, local enterprises have been exposed to odd competition. To sustain in the market, the local enterprises have to take appropriate intervention plans for their survival.

Keeping view to the above, the study was carried to understand the inherent meaning of productivity, locate suitable productivity and profitability models applicable to our local enterprises, which is capable to diagnose the problems and show ways to improve profitability.

Three models were chosen by literature survey. These models have been successfully utilised to the five local enterprises, namely, AB Bank Ltd., ACI

Limited, Bangladesh Lamps Limited, BOC Bangladesh Limited and Dulamia Cotton Spinning Mills Ltd. respectively.

These three models have demonstrated that these can be used for locating future areas of intervention despite their limitations. The first model through its 22 parameters, successfully interpreted the trends of different total and partial productivities.

The second model measured the growth rate. Depending upon the growth arte, it put forward a flow process indicating that if the profitability of the enterprise is positive, it has to be concerned with the primary and secondary productivity and on the other hand, of the profitability is negative; it has to give emphasis on the primary and secondary profitability factors.

The third model is quite capable of establishing relationship among the manpower, value addition and sales figure. This can be utilised to forecast the future sales figure and the capability of the enterprises to retain its manpower.

Each enterprise was studied by taking 5 years financial figures and talking to the Executives. Major findings of the individual companies have been discussed in the foregoing chapter. The detail calculations were elaborated as **annexure 'C' to 'G'**. General recommendations are also made based on the suggestions and strategies provided by the models as **annexure 'I'**.

The productivity ratios will serve the enterprises as measurable index to compare their performances over the years.

Through this study, besides measuring the productivity and locating the problems, it is felt that the enterprises should have to focus the vision where it wants to go. To drive the people to acquire that vision appropriate strategy has to be undertaken. Management style and structure has to conform to these. The staff selection and development should be in line with the overall objective of the bank. Manpower has to be motivated enough by intrinsic and extrinsic ways to get maximum out of them.

To bring improvement in profitability and productivity, we have to take co-ordinated efforts. In one hand, the employee needs proper attention; on the other hand, the shareholders will want more return. Both have to be addressed.

Business strategies to be formulated in a way that the manpower can achieve this strategy. Manpower strategy should not be isolated. Manpower to be trained and developed so that they can achieve the business strategy.

Chapter 8

Prospects For Future Researchers

The study findings imply that further studies can be carried out on the following areas:

8.1 Internal & External factors hindering the productivity:

The internal factors are controllable factors which can be minimised by the entrepreneurs but on the other hand, the external factors are very hard to control as these largely depends on the Government's decision. More precise identification will help the entrepreneurs to minimise the impact and also press the relevant bodies to raise voice against the harmful factors.

8.2 Influence of automation on productivity:

The level of automation can play a vital role on the productivity. Without changing other factors, the productivity of the enterprises can be improved to many folds. The research can identify how the level of automation can improve the productivity level of the enterprises.

8.3 Influence of education and skill level of employees on Productivity

The level of education and the skill level of the employees can largely influence the productivity. Similar interposes can be compared to see the impact of the said variables.

8.4 Management role in improving the Productivity

The role of management differs enterprise to enterprise. The style and type of management can directly influence the productivity of those enterprises. These could be interesting study to find the impact.

8.5 Back and forward linked enterprises in improving the Productivity

The input and output price levels can influence the productivity of an enterprise. The forward and backward linkage will influence the prises. The impact can be studied.

8.6 Impact of marketing on Productivity

The value addition depends on the value of the products. Marketing activities will determine the value of the products. The impact of marketing will thus be one of the areas for the future researchers.

8.7 Base line study to measure productivity on different sectors

The country does not have any base line study on the productivity and its level. No index is available to compare the productivity of an enterprise whether it is doing good or not. The future researchers can go for fixing the index of particular sectors.

8.8 Impact of Govt. policy on the Productivity

Government is one of the stake holders. The government in the form of TAX and VAT shares the value created by an enterprise. More value addition means more Tax. The overall success of the enterprises is thus tagged with the government policy on Tax and VAT.

8.9 Labour Management relations to productivity improvement

The positive participation of the labours in the production process will ensure the higher productivity and vice versa. It could be thus one of the interesting areas to see whether the 'X' or 'Y' theory or the combined can ensure in achieving higher productivity.

8.10 Work environment and Productivity

The external environment including the national and international factors can influence the productivity of an enterprise. This could be interesting for the future researchers to measure the degree of impact of the environmental factors.

ANNEXURE

			• A low ratio reflects poor assets utilisation
4.	Added Value per Taka of Operating Capital Added Value = Operating Capital	Pure Number	• Indicates how intensively capital is used, e.g. degree of fixed asset utilisation, control of stock levels and of cash management • A high ratio indicates the capital are managed efficiently • A low ratio reflects poor capital utilisation
5.	Added Value to Total Output Ratio Added Value = Total Output	Per cent	• This ratio can be used to gauge the degree of utilisation of bought in materials and services and changes in the price differentials and purchases. • A high ratio indicates efficient usage of purchase or favourable price differentials • A low ratio means - High cost of bought in materials and services - Poor product quality - Low price competition
6.	Total Output per Taka of Capital (i) Total Output = Tangible Fixed Asset (ii) Total Output / Operating Capital	Pure Number	• This ratio indicates the efficiency in capital utilisation and marketing system • A high ratio indicates efficiency in capital utilisation and good marketing system • A low ratio means - Low turnover of services and fixed assets
7.	Capital Per Employee (ii) Tangible Fixed Asset / Number of Employee Operating Capital	Taka per Employee	• This ratio indicates whether an enterprise adopts capital intensive or labour intensive policy • A high ratio indicates high capital utilisation and vice versa • A low ratio means: - Dependence on labour

	(iii) Number of Employee		intensive methods - Low technological inputs
8.	Wage Rate Labour Cost = Number of Employee	Taka per Employee	• This ratio measures the average remuneration per employee • A high ratio means high returns to individual employee and vice versa
9.	Labour Cost Competitiveness Added Value = Labour Cost	Pure Number	• This ratio indicates how competitive the enterprise is in term of employee cost • A high ratio indicates that the wealth created is well distributed • A low ratio indicates high labour cost which does not commensurate with added value creation
10.	Operating Profit per Taka of Operating Capital Operating Profit = Operating Capital	Pure Number	• Indicates the profitability of an enterprise • A high ratio indicates that investments in the enterprise have generated favourable returns and vice versa
11.	Operating Profit to Total Output Ratio Operating Profit = Total Output	Percent	• This ratio reflects the proportion of total output after deducting all costs • A high ratio means that enterprise getting high returns • A low ratio normally implies high costs
12.	Operating Profit Share in Added Value Operating Profit x 100 = Added Value	Percent	• This ratio indicates the performance of operating profit to added value • A high ratio is attributed to high output revenue and vice versa

13.	Labour Share in Added Value Labour Cost x 100 = Added Value	Percent	• This ratio indicates the proportion of added value which is allocated to labour costs • A high ratio may e the results of high wage rates or labour intensity • A high ratio also means low capital utilisation and vice versa
14.	Capital Share in Added Value Capital Cost (Depreciation) = Added Value	Percent	• This ratio indicates how much capital costs in incurred in creating added value • A high ratio indicates an inclination toward high capital intensity and vice versa
15.	Percentage of Material Consumed in Total Output Material Consumed x 100 = Total Output	Percent	• This ratio indicates the amount of material consumed in generating the output of an enterprise • A high ratio means high material consumption and vice versa
16.	Percentage of material Consumed of Added Value Material Consumed x 100 = Added Value	Percent	• This ratio indicates the amount of material consumed in creating the added value of an enterprise • A high ratio means high material consumption in creating added value of an enterprise and vice versa
17.	Total Productivity Measure Total Output = Total Input	Pure Number	• This ratio indicates the amount of total input consumed in generating total output • A high ratio indicates a better performance of the enterprise and vice versa
18.	System Conversion Efficiency Throughput = Total Input – Material used	Pure Number	• This ratio indicated the efficiency of the conversion system, usually the production system • A high ratio indicates an efficient conversion system and vice versa

19.	Throughput Ratio Throughput = Total Manufacturing Cost	Pure Number	• This ratio indicates the generation of output by the system • A high ratio indicates the effectiveness of the system and vice versa
20.	Competitive Edge Ratio Throughput = (Total Mfg. Cost + WIP)	Pure Number	• This ratio indicates the generation of output by the system including processing cost • A high ratio indicates good service management and vice versa
21.	Material Turnover Total Output = Material used	Pure Number	• This ratio indicates the adequate system/method, purchasing system and inventory system of the enterprise • A high ratio means adequate service, purchase and inventory control system of the enterprise and low wastage due to high quality work and vice versa
22.	Unit labour Cost Labour Cost = Total Output	Pure Number	• This ratio indicates the proportion of labour cost to total output • A high ratio indicates high labour cost. This could be due to lack of skilled employee or poor employee mix. In addition, it could be due to high employee turnover

Annexure 'B'

Calculation steps

DATA SHEET OF THE COMPANY					
	1995	1996	1997	1998	1999
1					
TOTAL SALE					
SALES GROWTH					
LESS: VAT/EXCISE DUTY					
LESS: DISCOUNT					
NET SALES					
LESS: OPENING STOCK FINISHED GOODS					
ADD : CLOSING STOCKS FINISHED GOODS					
LESS: OPENING WIP					
ADD: CLOSING WIP					
LESS: OPENING STOCK RAW/PACKING MATERIALS					
ADD: CLOSING STOCKS RAW/PACKING MATERIALS					
LESS: FINISHED GOODS PURCHASED					
ADD: RESEARCH & DEVELOPMENT					
ADD: SAMPLE					
2					
TOTAL MANUFACTURING COST					
INVENTORY ADJUSTMENT					
SELLING & ADMIN EXPENDITURE					
3					
MATERIALS CONSUMED					
PACKING MATERIAL					
INDIRECT MATERIALS					
FACTORY O.H (EXCLUDING BENEFITS TO WORKER)					
REPAIR & MAINTENANCE					
DEPRECIATION					
ADMIN & SELLING EXPENSES(EX. BENEFITS)					
CHANGE IN RAW MATERIAL INVENTORY					
4					
PROFIT BEFORE INTEREST					
ADD: OTHER INCOME					
ADD: NON OPERATING INCOME					
ADD: INCREASE/DECREASE IN STOCK					

	LESS: BANK CHARGE/INTEREST					
	LESS: CONTRIBUTION TO WPPF					
	PROFIT BEFORE TAX					
5						
	FIXED ASSETS(AVERAGE)					
	CURRENT ASSETS(AVERAGE)					
6						
	TOTAL OUTPUT					
	LESS: MATERIAL CONSUMED					
7						
8						
9						
10						
	LABOUR PRODUCTIVITY					
	VALUE ADDED LABOUR PRODUCTIVITY					
11						
12						
13						
14						
15						
	BEGINNING INVENTORY (RAW MATERIAL)					
	ENDING INVENTORY (RAW MATERIAL)					

Annexure 'C'

Arab Bangladesh Bank Limited

DATA SHEET OF THE BANK

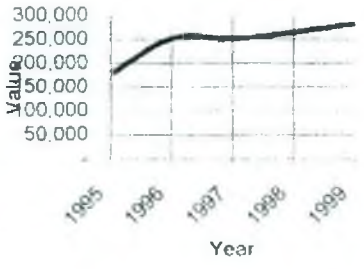
	1995	1996	1997	1998	1999
1 TOTAL OUTPUT					
INTEREST AND DISCOUNT	833,842,293	921,652,659	1,041,721,485	1,007,538,515	1,139,490,886
COMISSION, EXCH. & BROKERAGE	226,958,809	191,709,082	223,954,243	263,281,965	292,174,652
OTHER RECEIPTS	2,201,701	2,155,820	81,302,708	63,628,761	68,661,575
TOTAL INCOME GENERATED	1,062,998,803	1,115,517,561	1,303,178,434	1,334,439,241	1,500,327,110
LESS PROVISIONS	200,100,000	249,088,000	253,500,000	175,050,000	147,200,000
TOTAL INCOME SHOWN IN BALANCE SHEET	862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
INCOME GROWTH	-2.61%	4.75%	12.04%	2.40%	12.43%
2 TOTAL INPUT					
SERVICE COST					
INTEREST PAID ON DEPOSITS, BORROWINGS	515,629,668	512,301,781	575,416,845	663,253,847	825,816,049
ADMIN EXPENDITURE	275,674,036	292,849,560	334,716,439	357,701,055	389,644,462
SALARY, ALLOWANCES INCL. DIRECTORS	136,029,566	138,812,480	152,133,006	160,416,452	185,524,080
RENT, TAXES, INSURANCE, LIGHTING	50,710,413	53,334,691	63,742,095	68,227,958	71,967,935
LAW CHARGE	149,253	498,071	1,141,412	482,253	754,942
POSTAGE, TELEGRAMS & STAMPS	2,702,856	5,071,068	3,900,862	4,061,685	3,142,889
AUDIT FEES	150,000	201,250	201,250	201,250	210,000
DEPRECIATION & REPAIRS	42,027,243	43,812,581	46,806,686	49,143,665	53,833,579
STATIONERY, PRINTING, ADVERTISEMENT	20,035,874	18,807,051	19,441,670	16,180,191	17,554,405
OTHER EXPENDITURES	43,888,851	42,405,068	47,749,458	58,987,601	56,856,632
	791,103,704	805,141,141	910,133,284	1,020,954,902	1,215,460,511
3 COST OF SERVICE					
TOTAL SERVICE COST	515,629,668	512,301,781	575,416,845	663,253,847	825,816,049
ADD: OPENING BALANCE	1	1	1	1	1
LESS: CLOSING BALANCE	1	1	1	1	1
	515,629,668	512,301,781	575,416,845	663,253,847	825,816,049
4 BOUGHT IN SERVICES					
INTEREST PAID ON DEPOSITS, BORROWINGS	515,629,668	512,301,781	575,416,845	663,253,847	825,816,049
RENT, TAXES, INSURANCE, LIGHTING	50,710,413	53,334,691	63,742,095	68,227,958	71,967,935
LAW CHARGE	149,253	498,071	1,141,412	482,253	754,942
POSTAGE, TELEGRAMS & STAMPS	2,702,856	5,071,068	3,900,862	4,061,685	3,142,889
AUDIT FEES	150,000	201,250	201,250	201,250	210,000
DEPRECIATION & REPAIRS	42,027,243	43,812,581	46,806,686	49,143,665	53,833,579
STATIONERY, PRINTING, ADVERTISEMENT	20,035,874	18,807,051	19,441,670	16,180,191	17,554,405
OTHER EXPENDITURES	43,888,851	42,405,068	47,749,458	58,987,601	56,856,632
	675,274,158	676,328,861	758,000,278	860,538,450	1,030,136,431
5 OPERATING PROFIT					
PROFIT BEFORE TAX	71,579,275	173,295,270	139,545,150	138,444,339	137,666,599
PROVISION FOR TAX	31,000,000	70,000,000	50,000,000	50,000,000	49,000,000
PROFIT AFTER TAX	40,579,275	103,295,270	89,545,150	88,444,339	88,666,599
6 OPERATING CAPITAL (AVG.)					
FIXED ASSETS(AVERAGE)	129,619,009	131,817,911	215,925,413	225,257,806	223,970,161
CURRENT ASSETS(AVERAGE)	10,694,496,431	11,101,348,018	12,404,854,840	13,212,096,279	15,132,194,254
	10,824,115,440	11,235,165,929	12,620,780,253	13,435,353,685	15,356,164,415
7 THROUGHPUT					
TOTAL OUTPUT	862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
LESS: SERVICE COST	515,629,668	512,301,781	575,416,845	663,253,847	825,816,049
	347,253,311	466,134,830	474,261,589	496,145,394	527,311,061
8 WAGE AND BENEFITS TO ALL EMPLOYEE	136,029,566	138,812,480	152,133,006	160,416,452	185,524,080
Total cost	275,674,036	292,849,560	334,716,439	357,701,055	389,644,462
Salary as a percentage of Admin cost	42.09%	43.99%	45.45%	44.85%	47.56%
Salary as a percentage of total cost	14.60%	16.00%	16.72%	15.71%	15.25%
9 NUMBER OF EMPLOYEE	1,538	1,542	1,540	1,540	1,540
10 AVERAGE WAGE INCREASE RATE	9.40%	10.73%	18.26%	5.44%	15.64%
11 MAN-HOUR PRODUCTIVITY	226	246	284	284	273
LABOUR PRODUCTIVITY	542.160	591.201	681.637	681.637	654.246
VALUE ADDED LABOUR PRODUCTIVITY	177.845	251.842	258.542	264.281	281.611
12 SERVICE COST PERCENTAGE	60%	52%	55%	57%	61%
13 TOTAL VALUATION OF PLANT AND MACHINERY (from depreciation schedule)	85,000,000	100,000,000	133,820,000	215,930,000	215,930,000
14 ACCOUNTS RECEIVABLE	420,704,546	446,293,014	646,662,824	1,147,389,229	1,147,389,229
15 AV. INVENTORY					
Beginning Inventory(Cash)	200,000,000	300,000,000	400,000,000	466,292,014	1,215,165,156
Ending Inventory (Cash)	300,000,000	400,000,000	466,292,014	1,215,165,156	1,931,444,493
	250,000,000	350,000,000	433,146,007	840,728,585	1,573,554,825

WORKSHEET FOR PRODUCTIVITY RATIOS

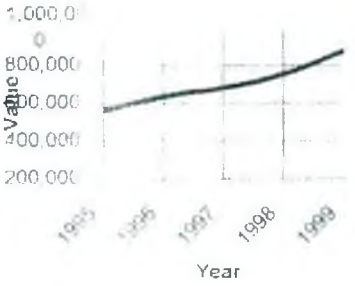
	Name of Ratio		1995	1996	1997	1998	1999
1	Added value per Employee		273,524,915	388,325,399	385,834,300	406,992,057	433,680,890
	Added Value/		1,538	1,542	1,540	1,540	1,540
	Number of Employee(Av.)	=	177,845	251,832	250,542	264,281	281,611
2	Total Output per Employee						
			862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
	Total Output/						
	No. of Employee(Av.)		1,538	1,542	1,540	1,540	1,540
		=	561,042	634,524	681,609	752,857	878,654
3	Added Value per Tk. of Fixed Assets:						
			273,524,915	388,325,399	385,834,300	406,992,057	433,680,890
	Added Value/						
	Fixed Assets(Av.)		129,619,009	133,817,914	215,925,413	223,257,406	223,970,161
		=	2	3	2	2	2
4	Added Value per Tk. operational capital						
			273,524,915	388,325,399	385,834,300	406,992,057	433,680,890
	Added Value/						
	Operational Capital(Av.)		10,694,496,431	13,101,348,015	12,404,854,840	13,212,096,279	15,132,194,254
		=	2.56%	3.50%	3.11%	3.08%	2.87%
5	Added Value to Total Output ratio		273,524,915	388,325,399	385,834,300	406,992,057	433,680,890
	Added value/		862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
	Total Output	=	31.70%	39.69%	36.76%	35.10%	32.05%
6	Total Output Ratio						
			862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
i	Total Output/						
	Fixed Assets(Av.)		129,619,009	133,817,914	215,925,413	223,257,406	223,970,161
		=	6.66	7.31	4.86	5.19	6.04
ii	Total Output/		862,882,979	978,436,611	1,049,678,434	1,159,399,241	1,353,127,110
	Operational Capital(Av.)						
			10,694,496,431	13,101,348,015	12,404,854,840	13,212,096,279	15,132,194,254
		=	8.07%	8.81%	8.46%	8.78%	8.94%
7	Capital per Employee						
			129,619,009	133,817,914	215,925,413	223,257,406	223,970,161
i	Fixed Assets(Av.)/	=					
	No. of Employee(Av.)		1,538	1,542	1,540	1,540	1,540
		=	84,278	86,782	140,211	144,972	145,435
ii	Operating Capital/		10,694,496,431	13,101,348,015	12,404,854,840	13,212,096,279	15,132,194,254
	No. of Employee(Av.)	=					
			1,538	1,542	1,540	1,540	1,540
		=	6,953,509	8,496,078	8,055,101	8,579,283	9,826,100
8	Wage Rate						
			116,029,566	128,812,480	152,133,086	160,416,452	185,324,080
	Labour Cost/	=					
	No. of Employee		1,538	1,542	1,540	1,540	1,540
		=	75,442	83,536	98,788	104,167	120,340

Graph Representation

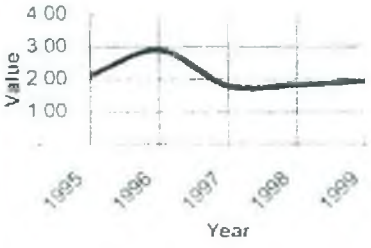
1. Added value per employee



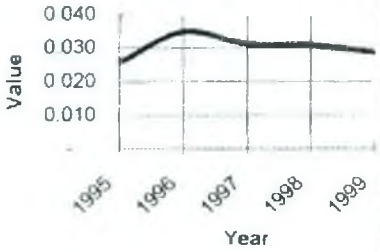
2. Total output per employee



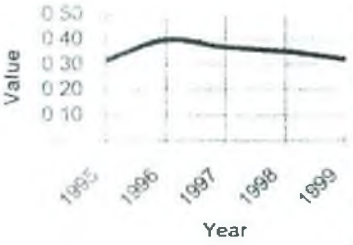
3. Added value to total asset



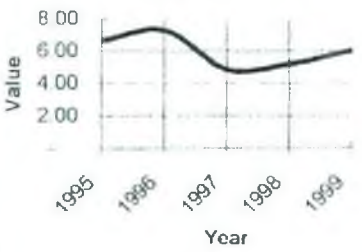
4. Added value to Op. capital



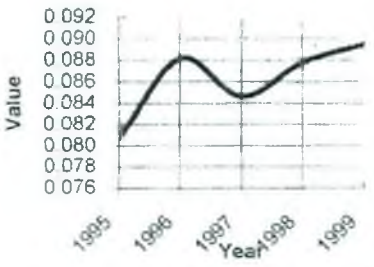
5. Added value to Total Output



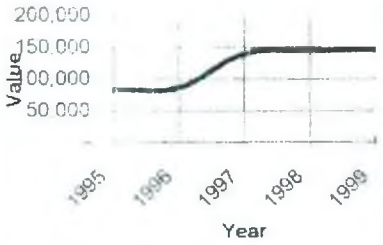
6i. Total output to fixed asset



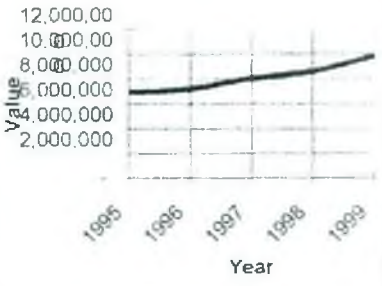
6ii. Total output to Op. capital



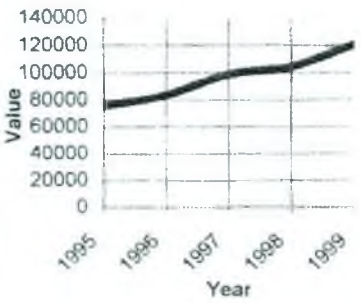
7i. Fixed asset per employee



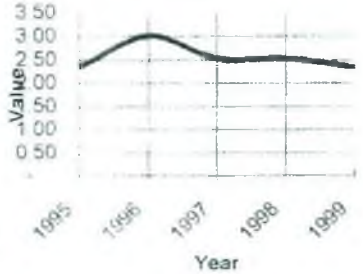
7ii. Op. capital per employee



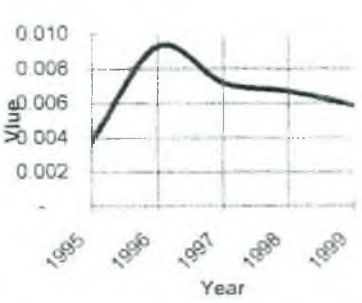
8. Wage Rate



9. Added value to labour cost



10. Op. profit to Op. capital



Profitability Ratio

a	Net Profit	71,579,275.00	173,295,270.00	139,545,150.00	138,444,339.00	137,666,599.00
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
		8.30%	17.71%	13.29%	11.94%	10.17%
b	Cost of goods sold	515,629,668.00	512,301,781.00	575,416,845.00	663,253,847.00	825,816,049.00
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
		59.76%	52.36%	54.82%	57.21%	61.03%
c	Operating Expenses	275,674,036.00	292,839,560.00	334,716,439.00	357,701,055.00	389,644,462.00
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
		31.95%	29.93%	31.89%	30.85%	28.80%
d	Interest paid	515,629,668.00	512,301,781.00	575,416,845.00	663,253,847.00	825,816,049.00
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
		0.60	0.52	0.55	0.57	0.61

Secondary Profitability Ratios

a	Total Asset turnover= Net reven	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
	Total asset	10,824,115,440.00	11,235,165,929.00	12,620,780,253.00	13,435,353,685.00	15,356,164,415.00
		7.97%	8.71%	8.32%	8.63%	8.81%
b	Accounts receivable turnover					
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
	Accounts receivable	420,704,546.00	446,292,014.00	646,662,824.00	1,147,389,229.00	1,147,389,229.00
		2.05	2.19	1.62	1.01	1.18
c	Fixed asset turnover					
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
	Fixed assets	129,619,089.00	133,817,914.00	215,925,413.00	223,257,406.00	223,970,161.00
		6.66	7.31	4.86	5.19	6.04
d	Inventory turnover					
	Net Revenue	862,882,979.00	978,436,611.00	1,049,678,434.00	1,159,399,241.00	1,353,127,110.00
	Av. inventory	250,000,000.00	350,000,000.00	433,146,007.00	840,728,585.00	1,573,554,824.50
		3.45	2.80	2.42	1.38	0.86

OPTIMUM MANPOWER

AT YEAR 2001

			1999
1	Labour Productivity	= V A /Manpower	281,610.97
2	Business per Employee	= Business/Manpower	878,653.97
3	Value Added Ratio	= V A /Business	32.05%
4	Labour's Share	= Personnel cost/V A	20.16%
5	Personal cost per person	= Personnel cost/Manpower	120,340.31

* Target Manpower keeping all staff and have wage increase at the existing rate

Current Sale	=	1,353,127,110.00	
Target sale : Assuming growth rate (Average of last 4 yrs. sales growth)	=	9.15%	
Target sale after 5 yrs	=	2,096,727,690.67	
Assumptions			
Planned Value Added	=	32.05%	
Planned Labour Share	=	20.16%	
Planned wage increase (Average of last 4 yrs. wage growth)	=	12.49%	
Target Manpower after 5 year	=	625	persons

* If the current manpower is retained, how much to be sold?

Planned value Added = Target Sales x Planned value Added
= 672,006,883

Expected personnel cost = 333,805,359

Labour Share = Personnel cost/Planned V A
= 49.67%

Planned Sales after 5 years = 13,259,892,194.03 Considering original value addition and Labour Share

Sales increase per annum = 57.85%

* if sales volume and the employee number both can't be changed what should be the proposed wage rate that to be increased ?

Let the proposed rate of increased = R

The sales volume after 5 years = 2,096,727,690.67

$$\text{We have, business} = \frac{\text{Emplovee no.x Benefit per emplovee}(1+R)^5}{\text{Value Addition x \% of labour share}}$$

$$\text{So,} \quad 2.1E+09 = \frac{1540 \times 120340.31\ (1+R)^5}{32.05\% \times 20.16\%}$$

So, R (Rate of increment) = 6.08%

DATA SHEET OF THE COMPANY

1 TOTAL OUTPUT					
TOTAL SALE	560,513,601	605,257,540	796,946,455	969,224,168	1,199,463,566
SALES GROWTH	*0*	*7.98%*	*31.67%*	*21.62%*	*23.76%*
LESS: VAT/EXCISE DUTY	0	0	0	0	0
LESS: DISCOUNT	0	0	0	0	0
NET SALES	*560,513,601*	*605,257,540*	*796,946,455*	*969,224,168*	*1,199,463,566*
LESS: OPENING STOCK FINISHED GOODS	68,701,821	137,623,790	170,129,626	224,074,830	184,590,937
ADD: CLOSING STOCKS FINISHED GOODS	137,623,790	170,129,626	224,074,830	184,590,937	264,435,154
LESS: OPENING WIP	10,579,302	11,376,156	13,080,531	12,128,381	6,868,292
ADD: CLOSING WIP	11,376,156	13,080,531	12,128,381	6,868,292	8,680,582
LESS: OPENING STOCK RAW/PACKING MATERIA	71,231,632	131,724,855	115,738,400	115,677,649	109,994,037
ADD: CLOSING STOCKS RAW/PACKING MATERI	131,724,855	115,738,400	115,677,649	109,994,037	330,559,651
LESS: FINISHED GOODS PURCHASED	123,761,382	158,774,315	202,387,814	155,139,700	412,500,297
ADD: RESEARCH & DEVELOPMENT	3,962,250	4,924,112	6,140,348	4,693,522	5,936,866
ADD: SAMPLE	11,043,371	10,538,199	16,318,289	8,779,148	1,631,889
	583,498,617	*480,169,292*	*669,950,078*	*777,089,544*	*896,754,145*
2 TOTAL INPUT :					
TOTAL MANUFACTURING COST	376,948,904	425,168,768	538,005,573	647,365,744	839,447,599
LESS: INVENTORY ADJUSTMENT	*22,985,016*	*-125,088,248*	*-126,996,377*	*-192,134,624*	*-302,709,421*
SELLING & ADMIN EXPENDITURE	139,960,740	158,126,239	202,143,040	225,988,502	263,522,330
	539,894,660	*458,206,759*	*613,152,236*	*681,219,622*	*800,260,508*
3 BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	288,263,778	253,316,510	340,723,642	385,734,736	437,625,857
PACKING MATERIAL	0	0	0	0	0
INDIRECT MATERIALS	0	0	0	0	0
REPAIR & MAINTENANCE	14,991,794	10,704,280	10,570,552	17,605,088	17,739,704
DEPRECIATION	11,547,289	15,938,568	17,170,564	20,785,159	22,405,368
ADMIN & SELLING EXPENSES(EX. BENEFITS)	80,691,128	106,895,087	132,976,813	138,625,732	165,392,916
CHANGE IN RAW MATERIAL INVENTORY	22,985,016	-125,088,248	-126,996,377	-192,134,624	-302,709,421
	428,479,005	*261,766,197*	*374,445,194*	*370,616,091*	*340,454,424*
4 OPERATING PROFIT					
PROFIT BEFORE INTEREST	*43,603,957*	*21,962,533*	*56,797,842*	*95,869,922*	*96,493,637*
ADD: OTHER INCOME	15,614,096	11,111,530	8,793,660	7,343,080	7,954,355
ADD: NON OPERATING INCOME					
ADD: INCREASE/DECREASE IN STOCK	0				
LESS: BANK CHARGE/INTEREST	19,839,211	19,021,371	23,954,136	31,630,429	25,951,169
LESS: CONTRIBUTION TO WPPF	2,303,754	669,176	1,982,732	3,408,695	3,737,944
PROFIT BEFORE TAX	*46,075,088*	*13,383,516*	*39,654,634*	*68,173,878*	*74,758,879*
5 OPERATING CAPITAL (AV.)					
FIXED ASSETS(AVERAGE)	188,398,325	186,864,051	186,177,408	197,754,454	208,280,775
CURRENT ASSETS(AVERAGE)	415,960,044	467,924,046	528,449,126	535,009,472	687,478,392
	604,358,369	*654,788,097*	*714,626,534*	*732,763,926*	*895,759,167*
6 THROUGHPUT :					
TOTAL OUTPUT	*583,498,617*	*480,169,292*	*669,950,078*	*777,089,544*	*896,754,145*
LESS: MATERIAL CONSUMED	*288,263,778*	*253,316,510*	*340,723,642*	*385,734,736*	*437,625,857*
	295,234,839	*226,852,782*	*329,226,436*	*391,354,808*	*459,128,288*
7 WAGE AND BENEFITS TO ALL EMPLOYEE	72,724,816	95,265,850	106,142,637	124,392,194	139,640,908
8 NUMBER OF EMPLOYEE :	576	576	678	769	873
9 AVERAGE WAGE INCREASE RATE		*31%*	*-5%*	*3%*	*-1%*
10 MAN-HOUR PRODUCTIVITY	*505*	*438*	*490*	*525*	*572*
LABOUR PRODUCTIVITY	*973,114*	*1,050,794*	*1,175,437*	*1,260,370*	*1,373,956*
VALUE ADDED LABOUR PRODUCTIVITY	*289,779*	*406,843*	*657,304*	*555,603*	*662,892*
11 MATERIAL CONSUMPTION PERCENTAGE	*51.43%*	*41.85%*	*42.75%*	*39.80%*	*36.49%*
12 TOTAL VALUATION OF PLANT AND MACHINERY (from depreciation schedule)	188,398,325	186,864,051	186,177,408	197,754,454	208,280,775
13 INTEREST EXPENSES	19,839,211	19,021,371	23,954,136	31,630,429	25,951,169
14 ACCOUNTS RECEIVABLE	52,766,033	60,800,234	59,675,654	75,252,361	87,122,812
15 AV. INVENTORY					
Beginning Inventory(Raw Mat	71,231,632	131,724,855	170,129,626	224,074,830	184,590,937
Ending Inventory (Raw Mat)	131,724,855	170,129,626	224,074,830	184,590,937	264,435,154
	101,478,244	*150,927,241*	*197,102,228*	*204,332,884*	*224,513,046*

ADDED VALUE COMPUTATION

DESCRIPTION	1995	1996	1997	1998	1999
1 TOTAL OUTPUT	583,498,617	480,169,292	669,950,078	777,089,544	896,754,145
2 LESS					
BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	288,263,778	253,316,510	340,723,642	385,734,736	437,625,857
PACKING MAT	0	0	0	0	0
INDIRECT MATERIALS	0	0	0	0	0
REPAIR & MAINTENANCE	14,991,794	10,704,280	10,570,552	17,605,088	17,739,704
ADMIN & OTHER EXP (EX. BENEFITS	90,691,128	106,895,087		138,625,732	165,392,916
CHANGE IN RAW MATERIAL INVENT	22,985,016	(125,088,248)	(126,996,377)	(192,134,624)	(302,709,421)
TOTAL	416,931,716	245,827,629	224,297,817	349,830,932	318,049,056
VALUE ADDITION (ITEM 1 - ITEM 2)	166,566,901	234,341,663	445,652,261	427,258,612	578,705,089

WORKSHEET FOR PRODUCTIVITY RATIOS

Name of Ratio		1995	1996	1997	1998	1999
1. Added value per Employee:		166566901	234341663	445652261	427258612	578705089
Added Value/	=	576	576	678	769	873
Number of Employee(Av.	=	289179	406843	657304	555603	662892
2. Total Output per Employee:		583498617	480169292	669950078	777089544	896754145
Total Output/	=	576	576	678	769	873
No. of Employee(Av.)	=	1013018	833627	988127	1010520	1027210
3. Added Value per Tk. of Fixed Assets:		166566901	234341663	445652261	427258612	578705089
Added Value/	=	188398325	186864051	186177408	197754454	208280775
Fixed Assets(Av.)	=	0.88	1.25	2.39	2.16	2.78
4. Added Value per Tk. operational capital:		166566901	234341663	445652261	427258612	578705089
Added Value/	=	415960044	467924046	528449126	535009472	687478392
Operational Capital(Av.)	=	0.400	0.501	0.843	0.799	0.842
5. Added Value to Total Output ratio:		166566901	234341663	445652261	427258612	578705089
Added value/	=	583498617	480169292	669950078	777089544	896754145
Total Output	=	0.285	0.488	0.665	0.550	0.645
6. Total Output Ratio:		583498617	480169292	669950078	777089544	896754145
i. Total Output/	=	188398325	186864051	186177408	197754454	208280775
Fixed Assets(Av.)	=	3.10	2.57	3.60	3.93	4.31
ii. Total Output/		583498617	480169292	669950078	777089544	896754145
Operational Capital(Av.)	=	415960044	467924046	528449126	535009472	687478392
	=	1.40	1.03	1.27	1.45	1.30
7. Capital per Employee:		188398325	186864051	186177408	197754454	208280775
i. Fixed Assets(Av.)/	=	576	576	678	769	873
No. of Employee(Av.)	=	327080	324417	274598	257158	238580
ii. Operating Capital/		415960044	467924046	528449126	535009472	687478392
No. of Employee(Av.)	=	576	576	678	769	873
	=	722153	812368	779423	695721	787490
8. Wage Rate:		72724816	95265850	106142637	124392194	139640908
Labour Cost/	=	576	576	678	769	873
No. of Employee	=	126258	165392	156553	161758	159955

9 Labour Cost Competitiveness

Added Value/	166566901	234341663	445652261	427258612	578705089
Labour Cost =	72724816	95265850	106142637	124392194	139640908
	2.29	2.46	4.20	3.43	4.14

10 Operational Profit per Tk. of Operating Capital

Operating Profit/	46075088	13383516	39654634	68173878	74758879
Operating Capital(Av.) =	415960044	367324046	528449126	535009472	687478392
	0.11	0.03	0.08	0.13	0.11

11 Operating Profit to Total Output

Operating Profit/	46075088	13383516	39654634	68173878	74758879
Total Output =	583498617	480169292	669950078	777089544	896754145
	7.90%	2.79%	5.92%	8.77%	8.34%

12 Operating Profit Share in Added value=

	46075088	13383516	39654634	68173878	74758879
Operating Profit / =	166566901	234341663	445652261	427258612	578705089
Added Value	0.28	0.06	0.09	0.16	0.13

13 Labour Share in Added Value

	72724816	95265850	106142637	124392194	139640908
Labour Cost / =	166566901	234341663	445652261	427258612	578705089
Added value	0.44	0.41	0.24	0.29	0.24

14. Capital Share in Added Value:

	11547289	15938568	17170564	20785159	22405368
Capital Cost(Dep.) * 100 =	166566901	234341663	445652261	427258612	578705089
Added Value	0.07	0.07	0.04	0.05	0.04

15 % of Materials Consumed of Total Output

	288263778	253316510	340723642	385734736	437625857
Materials Consumed * 100 / =	583498617	480169292	669950078	777089544	896754145
Total Output	49.40%	52.76%	50.86%	49.64%	48.80%

16 % of Materials consumed of Added Value

	288263778	253316510	340723642	385734736	437625857
Materials Consumed * 10 =	166566901	234341663	445652261	427258612	578705089
Added Value	173.06%	108.10%	76.46%	90.28%	75.62%

17 Total Productivity Measure=

	583498617	480169292	669950078	777089544	896754145
Total Output/ =	539894660	458206759	613152236	681219622	800260508
Total Input	1.08	1.05	1.09	1.14	1.12

18 System Conversion Efficiency

	295234839	226852782	329226436	391354808	459128288
Throughput/ =	251630882	204890249	272428594	295484886	362634651
(Total Input- Materials consi	1.17	1.11	1.21	1.32	1.27

19. Throughput ratio:

	295234839	226852782	329226436	391354808	459128288
Throughput/ =	376948904	425168768	538005573	647365744	839447599
Total Manufacturing cost)	0.78	0.53	0.61	0.60	0.55

20 Competitive Edge ratio

	295234839	226852782	329226436	391354808	459128288
Throughput/ =	387926783	437397112	550610029	656864081	847222036
(Total mfg. cost & WIP av.)	0.76	0.52	0.60	0.60	0.54

21 Materials Turn over:

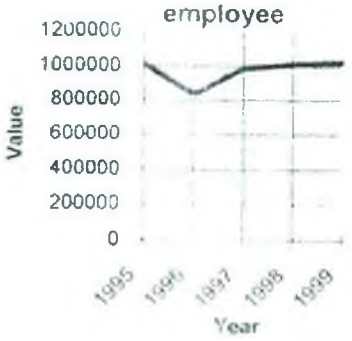
	583498617	480169292	669950078	777089544	896754145
Total Output/ =	288263778	253316510	340723642	385734736	437625857
Materials Consumed	2.02	1.90	1.97	2.01	2.05

22 Unit Labour Cost

	72724816	95265850	106142637	124392194	139640908
Labour Cost/ =	539894660	458206759	613152236	681219622	800260508
Total Input	0.135	0.208	0.173	0.183	0.174

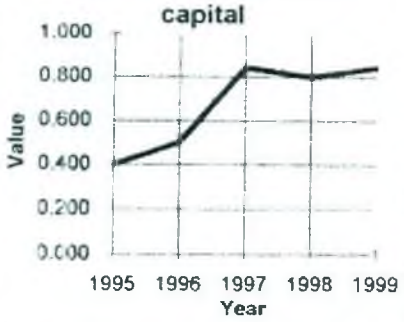
1. Added value per employee

2. Total output per employee

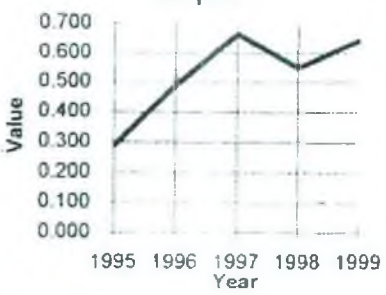


3. Added value to total asset

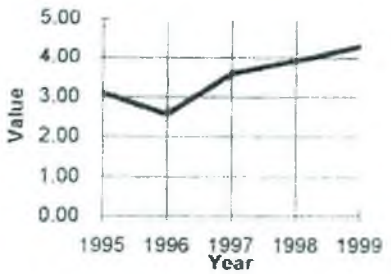
4. Added value to Op. capital



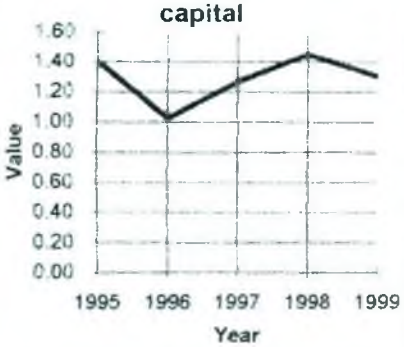
5. Added value to Total Output



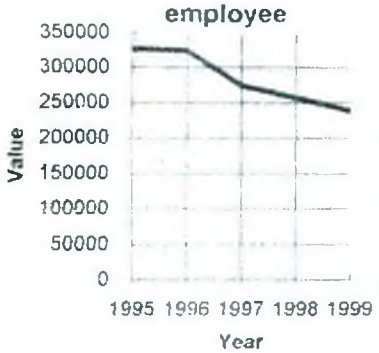
6i. Total output to fixed asset



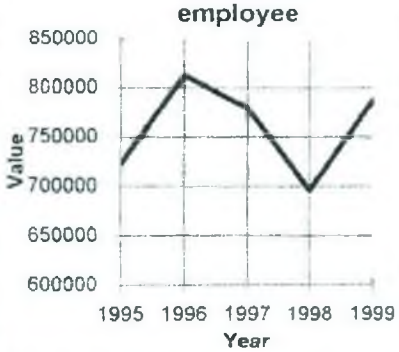
6ii. Total output to Op. capital



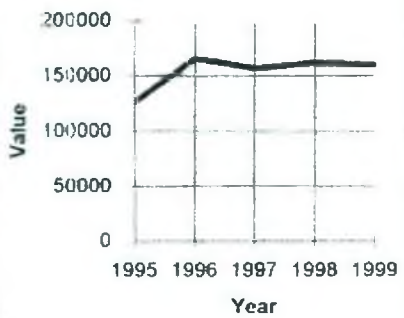
7i. Fixed asset per employee



7ii. Op. capital per employee

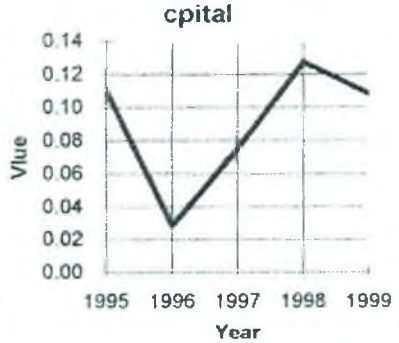


8. Wage Rate



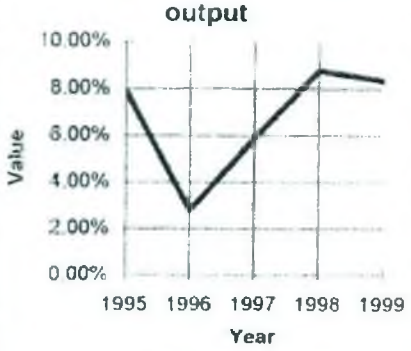
9. Added value to labour cost

10. Op. profit to Op. cpital

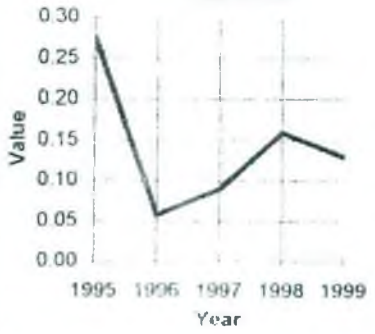


Year Year Year

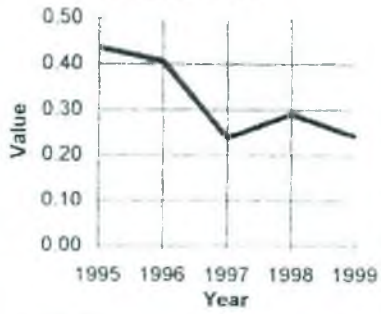
11. Op. profit to Total output



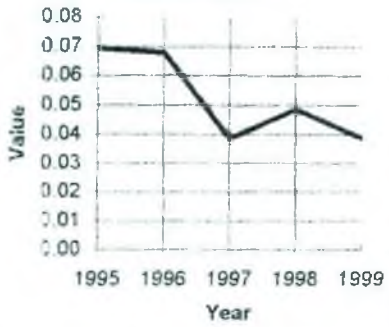
12. Op. profit to Value addition



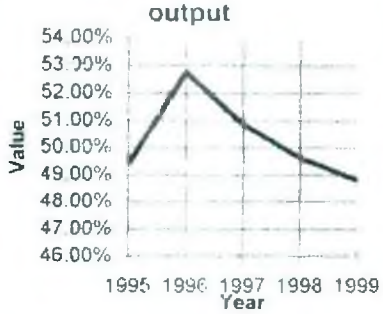
13. Labour cost to added value



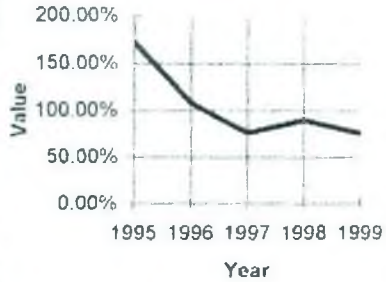
14. Depriciation to added value



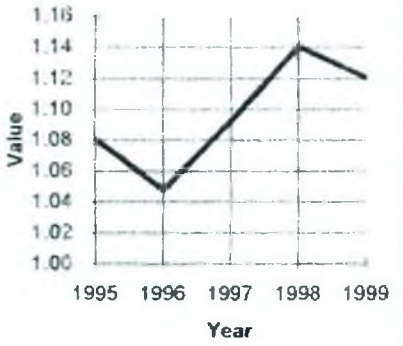
15. % of Material Consumed to total output



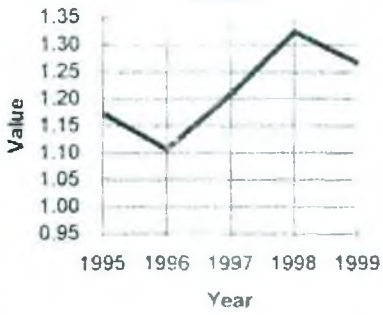
16. % of material consumed to added value



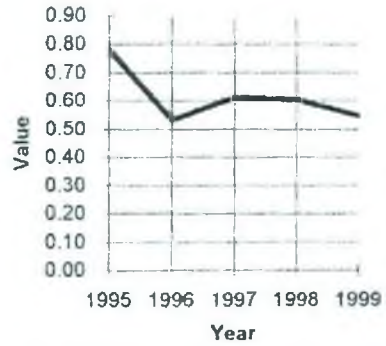
17. Total Productivity



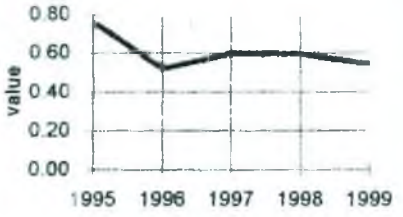
18. System conversion Ratio



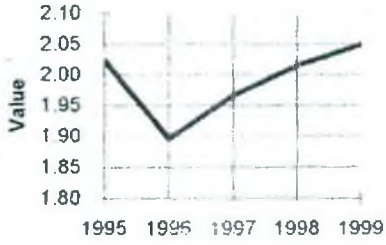
19. Throughput Ratio



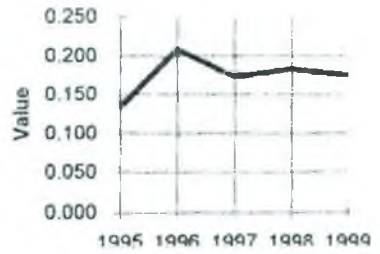
20. Competitive edge ratio



21. Total output to material consumed



22. Unit labour cost



COMPANY PERFORMANCE APPRAISAL(CPA)

	1995	1996	1997	1998	1999
Return on Investment(R = Net Profit / Total Assets	46075088 / 188398325	13383516 / 186864051	39654634 / 186177408	68173878 / 197754454	74758879 / 208280775
	24.46%	7.16%	21.30%	34.47%	35.89%
Growth Rate(GR) =		-70.71%	197.39%	61.85%	4.12%

If the growth rate is decreasing or constant, check the primary and secondary profitability ratios. If the growth rate is increasing, to consolidate the position, check the primary and secondary productivity ratios.

Primary Productivity Ratios:

	1995	1996	1997	1998	1999
i) Total Productivity ratio= Total output / Total input	583498617 / 539894660	480169292 / 458206759	669950078 / 613152236	777089544 / 681219622	896754145 / 800260508
	= 1.08	1.05	1.09	1.14	1.12
ii) Labour Productivity ratio:					
a Value Addition / Total work hours worked (value addition per hour)	= 166566901 / 1382400 = 120.49	234341663 / 1382400 169.52	445652261 / 1627200 273.88	427258612 / 1845600 231.50	578705089 / 2095200 276.21
b Value Addition / No. of workers (value addition per worker)	= 166566901.00 / 576 = 289178.65	234341663.00 / 576 406843.16	445652261.00 / 678 657304.22	427258612.00 / 769 555602.88	578705089.00 / 873 662892.43
c Value Addition / Salaries and wages (value addition per Tk. of benefit)	= 166566901 / 72724816 = 2.29	234341663 / 98265850 2.46	445652261 / 106142637 4.20	427258612 / 124392194 3.43	578705089 / 139640908 4.14
iii) Capital Productivity ratio:					
a Value Addition / Fixed Asset (value addition per Tk. of fixed asset)	= 166566901 / 188398325 = 0.88	234341663 / 186864051 1.25	445652261 / 186177408 2.39	427258612 / 197754454 2.16	578705089 / 208280775 2.78
b Value Addition / Current Asset (value addition per Tk. of current asset)	= 166566901 / 415960044 = 0.40	234341663 / 467924046 0.50	445652261 / 528449126 0.84	427258612 / 535009472 0.80	578705089 / 687478392 0.84
c Value Addition / Total Asset (value addition per Tk. of fixed asset)	= 166566901 / 604358369 = 0.28	234341663 / 654788097 0.36	445652261 / 714626534 0.62	427258612 / 732763926 0.58	578705089 / 895759167 0.65
d Value Addition / Plant and Machinery (value addition per Tk. of plant)	= 166566901 / 188398325 = 0.88	234341663 / 186864051 1.25	445652261 / 186177408 2.39	427258612 / 197754454 2.16	578705089 / 208280775 2.78

Profitability Ratio

a	Net Profit	= 46075088	13383516	39654634	68173878	74758879
	Net Sales	560513601	605257540	796946455	969224168	1199463566
		= 0.08	0.02	0.05	0.07	0.06
b	Cost of goods sold	= 376948904	425168768	538005573	647365744	839447599
	Net Sales	560513601	605257540	796946455	969224168	1199463566
		= 0.67	0.70	0.68	0.67	0.70
c	Operating Expenses	= 139960740	158126239	202143040	225988502	263522330
	Net Sales	560513601	605257540	796946455	969224168	1199463566
		= 0.25	0.26	0.25	0.23	0.22
d	Interest expense	= 10839211	19021371	23954136	31630429	25951169
	Net Sales	560513601	605257540	796946455	969224168	1199463566
		= 0.02	0.03	0.03	0.03	0.02

Secondary Profitability Ratios

a	Total Asset turnover= Net sales	= 560513601	605257540	796946455	969224168	1199463566
	Total asset	604358369	654788097	714626534	732763926	895759167
		= 0.93	0.92	1.12	1.32	1.34
b	Accounts receivable turnover					
	Net sales	= 560513601	605257540	796946455	969224168	1199463566
	Accounts receivable	57768031	60800234	59675654	75252361	87122812
		= 9.70	9.95	13.35	12.88	13.77
c	Fixed asset turnover					
	Net sales	= 560513601	605257540	796946455	969224168	1199463566
	Fixed assets	188398325	186864051	186177408	197754454	208280775
		= 2.98	3.24	4.28	4.90	5.76
d	Inventory turnover					
	Net sales	= 560513601	605257540	796946455	969224168	1199463566
	Average inventory	101478243.5	150927240.5	197102228	204332883.5	224513045.5
		= 5.52	4.01	4.04	4.74	5.34

OPTIMUM MANPOWER

			1999
1.	Labour Productivity	= V A /Manpower	662892
2	Sales per Employee	= Sales/Manpower	1,373,956
3.	Value Added Ratio	= V A /Sale	48.25%
4.	Labour's Share	= Personnel cost/V A	43.91%
5.	Personal cost per person	= Personnel cost/Manpower	159,955

* Target Manpower keeping all staff and have wage increase at the existing rate

Current Sale	=	1,199,463,566
Sales growth	=	21.26%
(Assuming last four years average)		
Target sale after 5 yrs.	=	3,144,200,185
Planned Value Added	=	48.25%
Planned Labour Share	=	43.91%
Planned wage increase	=	1.11%
(Average of last 2 yrs. wage growth)		
Target Manpower after 5 year	=	3941 persons

* If the current manpower is retained, how much to be sold?

Planned value Added	= Target Sales x Planned value Added	
	=	1,516,982,007
Expected personnel cost	=	147,530,514
Labour Share	= Personnel cost/Planned V A	
	= 9.73%	
Planned Sales after 5 years	= 696,454,999	Considering original value addition and Labour Share
Sales increase per annum	= -10.20%	

* if sales volume and the employee number both can't be changed
what should be the proposed wage rate that to be increased ?

Let the proposed rate of increased = R

The sales volume after 5 years = 3,144,200,185

$$\text{We have, sales} = \frac{\text{Employee no.x Benefit per employee}(1+R)^5}{\text{Value Addition x \% of labour share}}$$

$$\text{So,} \quad 3,144,200,185 = \frac{873 \times 159955.22\,(1+R)^5}{48.25\% \times 43.91\%}$$

So, R (Rate of increment) = 36.68%

Annexure 'E'

Bangladesh Lamps Limited

DATA SHEET OF THE COMPANY(LAMPS)

	1995	1996	1997	1998	1999
1 TOTAL OUTPUT :					
TOTAL SALE	[illegible]	354,156,920	373,817,535	336,220,832	296,889,333
SALES GROWTH	*0*	*11.50%*	*5.55%*	*-10.06%*	*-11.70%*
LESS: VAT/EXCISE DUTY	0	0	48,886,541	43,857,707	38,727,016
LESS: DISCOUNT	0	0	0	0	0
NET SALES	*317,635,282*	*354,156,920*	*324,930,994*	*292,363,125*	*258,162,317*
LESS: OPENING STOCK FINISHED GOODS	4,710,093	11,507,837	17,051,402	10,728,744	15,753,776
ADD : CLOSING STOCKS FINISHED GOODS	11,507,837	17,051,402	10,728,744	15,753,776	1,246,023
LESS: OPENING WIP	2,726,500	1,927,786	1,907,860	2,587,554	3,082,436
ADD: CLOSING WIP	1,927,786	1,907,860	2,587,554	3,082,436	2,079,854
LESS: OPENING STOCK RAW/PACKING MATERI	19,624,976	17,046,766	27,863,875	175,178,248	23,793,818
ADD: CLOSING STOCKS RAW/PACKING MATERI	17,046,766	27,863,875	175,178,248	23,793,818	21,508,127
LESS: FINISHED GOODS PURCHASED			0	0	0
ADD: RESEARCH & DEVELOPMENT			0	0	0
	321,055,502	*370,497,668*	*466,602,403*	*146,498,609*	*240,366,291*
2 TOTAL INPUT :					
TOTAL MANUFACTURING COST	248,479,163	277,708,355	267,883,946	255,441,315	233,851,554
LESS: INVENTORY ADJUSTMENT	*3,420,220*	*16,340,748*	*141,671,409*	*-145,864,516*	*-17,796,026*
SELLING & ADMIN EXPENDITURE	13,881,731	16,888,932	18,757,617	14,927,369	15,071,393
	265,781,114	*310,938,035*	*428,312,972*	*124,504,168*	*231,126,921*
3 BOUGHT IN MATERIALS & SERVICES :					
MATERIALS CONSUMED	155,580,090	178,276,819	187,776,278	187,568,700	144,002,452
PACKING MATERIAL	0	0	0	0	0
INDIRECT MATERIALS	0	0	0	0	0
FACTORY O.H (EXCLUDING BENEFITS TO WORK	23,970,102	26,049,081	38,530,179	33,784,311	32,788,945
REPAIR & MAINTENANCE	5,418,759	6,139,394	7,699,398	6,838,126	8,601,923
DEPRECIATION	9,163,877	9,030,706	8,736,722	8,917,042	9,919,329
ADMIN & SELLING EXPENSES(EX. BENEFITS)	4,276,176	5,464,966	7,195,490	5,738,553	5,756,916
	196,409,009	*224,960,966*	*249,938,067*	*242,846,732*	*201,069,565*
4 OPERATING PROFIT :					
PROFIT BEFORE INTEREST	*55,274,388*	*59,559,633*	*38,289,431*	*21,994,441*	*9,239,370*
ADD: OTHER INCOME	2,791,381	149,544	266,823	10,886,420	920,225
ADD: NON OPERATING INCOME					
ADD: INCREASE/DECREASE IN STOCK	0				
LESS: BANK CHARGE/INTEREST	-74,341	-1,014,511	-2,658,327	-433,623	-4,177,252
LESS: CONTRIBUTION TO WPPF	2,768,577	2,891,604	1,962,599	1,586,404	682,707
PROFIT BEFORE TAX	*55,371,533*	*57,832,084*	*39,251,982*	*31,728,080*	*13,654,140*
5 OPERATING CAPITAL (AV.) :					
FIXED ASSETS(AVERAGE)	62,597,904	53,582,143	48,135,711	39,518,408	238,721,556
CURRENT ASSETS(AVERAGE)	158,265,057	197,324,159	221,709,713	237,018,176	260,053,206
	220,862,961	*250,906,302*	*269,845,424*	*276,536,584*	*498,774,762*
6 THROUGHPUT :					
TOTAL OUTPUT	*321,055,502*	*370,497,668*	*466,602,403*	*146,498,609*	*240,366,291*
LESS: MATERIAL CONSUMED	*155,580,090*	*178,276,819*	*187,776,278*	*187,568,700*	*144,002,452*
	165,475,412	*192,220,849*	*278,826,125*	*-41,070,091*	*96,363,839*
7 WAGE AND BENEFITS TO ALL EMPLOYEE	26,340,982	28,845,578	31,080,614	33,080,068	32,343,047
8 NUMBER OF EMPLOYEE :	119	119	114	115	112
9 AVERAGE WAGE INCREASE RATE		*10%*	*12%*	*6%*	*0%*
10 MAN-HOUR PRODUCTIVITY	*1,112*	*1,240*	*1,366*	*1,218*	*1,104*
LABOUR PRODUCTIVITY	*2,669,204*	*2,976,109*	*3,279,101*	*2,923,659*	*2,650,798*
VALUE ADDED LABOUR PRODUCTIVITY	*1,047,450*	*1,222,997*	*1,900,564*	*-837,810*	*350,864*
11 MATERIAL CONSUMPTION PERCENTAGE	*48.98%*	*50.34%*	*57.79%*	*64.16%*	*55.78%*
12 TOTAL VALUATION OF PLANT AND MACHINERY (from depreciation schedule)	62,597,904	53,582,143	48,135,711	39,518,408	238,721,556
13 INTEREST EXPENSES	-74,341	-1,014,511	-2,658,327	-433,623	-4,177,252
14 ACCOUNTS RECEIVABLE	82,710,504	73,036,294	124,714,041	137,801,549	186,225,047
15 AV. INVENTORY:					
Beginning Inventory(Raw Mat.)	19,624,976	17,046,766	27,863,875	14,310,802	23,793,818
Ending Inventory (Raw Mat.)	17,046,766	27,863,875	14,310,802	23,793,818	21,508,127
	18,335,871	*22,455,321*	*21,087,339*	*19,052,310*	*22,650,973*

ADDED VALUE COMPUTATION

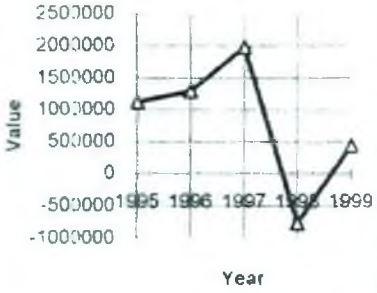
DESCRIPTION	1995	1996	1997	1998	1999
1 TOTAL OUTPUT	321,055,502	370,497,668	466,602,403	146,498,689	240,366,291
2 LESS:					
BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	155,580,060	178,276,819	187,776,278	187,568,700	144,002,452
PACKING MAT	0	0	0	0	0
INDIRECT MATERIALS	0	0	0	0	0
FACTORY O.H (EX.BENFITS TO WORK	23,970,107	26,049,081	38,530,179	33,784,311	32,788,945
REPAIR & MAINTENANCE	3,418,759	6,139,394	7,699,398	6,838,126	8,601,923
ADMIN & OTHER EXP	4,276,176	5,464,966	7,195,490	5,738,553	5,756,916
TOTAL	187,245,132	215,930,260	241,201,345	233,929,690	191,150,236
VALUE ADDITION (ITEM 1 - ITEM 2)	133,810,370	154,567,408	225,401,058	(87,431,081)	49,216,055

WORKSHEET FOR PRODUCTIVITY RATIOS

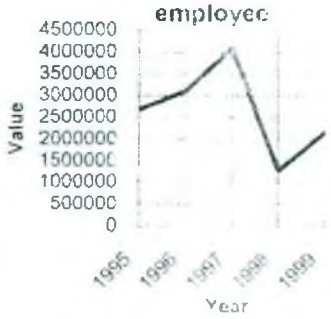
	Name of Ratio		1995	1996	1997	1998	1999
1.	Added value per Employee:		133810370	154567408	225401058	-87431081	49216055
	Added Value/	=	119	119	114	115	112
	Number of Employee(Av.	=	1124457	1298886	1977202	-760270	439429
2.	Total Output per Employee:						
			321055502	370497668	466602403	146498609	240366291
	Total Output/	=					
	No. of Employee(Av.)		119	119	114	115	112
		=	2697945	3113426	4093004	1273901	2146128
3.	Added Value per Tk. of Fixed Assets:						
			133810370	154567408	225401058	-87431081	49216055
	Added Value/	=					
	Fixed Assets(Av.)		62597904	53582143	48135711	39518408	238721556
		=	2.14	2.88	4.68	-2.21	0.21
4.	Added Value per Tk. operational capital:						
			133810370	154567408	225401058	-87431081	49216055
	Added Value/	=					
	Operational Capital(Av.)		158265057	197324159	221709713	237018176	260053206
		=	0.845	0.783	1.017	-0.369	0.189
5.	Added Value to Total Output ratio:		133810370	154567408	225401058	-87431081	49216055
		=					
	Added value/		321055502	370497668	466602403	146498609	240366291
	Total Output	=	0.417	0.417	0.483	-0.597	0.205
6.	Total Output Ratio:						
			321055502	370497668	466602403	146498609	240366291
i.	Total Output/	=					
	Fixed Assets(Av.)		62597904	53582143	48135711	39518408	238721556
		=	5.13	6.91	9.69	3.71	1.01
ii.	Total Output/		321055502	370497668	466602403	146498609	240366291
	Operational Capital(Av.)	=					
			158265057	197324159	221709713	237018176	260053206
		=	2.03	1.88	2.10	0.62	0.92
7.	Capital per Employee:						
			62597904	53582143	48135711	39518408	238721556
i.	Fixed Assets(Av.)/	=					
	No. of Employee(Av.)		119	119	114	115	112
		=	526033	450270	422243	343638	2131442
ii.	Operating Capital/		158265057	197324159	221709713	237018176	260053206
	No. of Employee(Av.)	=					
			119	119	114	115	112
		=	1329958	1658186	1944822	2061028	2321904
8.	Wage Rate:						
			26340982	28845578	31080614	33080068	32343047
	Labour Cost/	=					
	No. of Employee		119	119	114	115	112
		=	221353	242400	272637	287653	288777

9 Labour Cost Competitiveness					
Added Value/	133810370	154567408	225401058	-87431081	49216055
Labour Cost =	26340982	28845578	31080614	33080068	32343047
	5.08	5.36	7.25	-2.64	1.52
10 Operational Profit per Tk of Operating Capital					
Operating Profit/	55371533	57832084	39251982	31728080	13654140
Operating Capital(Av.) =	158265057	197324159	221709713	237018176	260053206
	0.35	0.29	0.18	0.13	0.05
11 Operating Profit to Total Output					
Operating Profit/	55371533	57832084	39251982	31728080	13654140
Total Output =	321055502	370497668	466602403	146498609	240366291
	17.25%	15.61%	8.41%	21.66%	5.68%
12 Operating Profit Share in Added value=	55371533	57832084	39251982	31728080	13654140
Operating Profit /	133810370	154567408	225401058	-87431081	49216055
Added Value =	0.41	0.37	0.17	-0.36	0.28
13 Labour Share in Added Value:					
Labour Cost /	26340982	28845578	31080614	33080068	32343047
Added value =	133810370	154567408	225401058	-87431081	49216055
	0.20	0.19	0.14	-0.38	0.66
14 Capital Share in Added Value:					
Capital Cost(Dep.) * 100 /	9163877	9030706	8736722	8917042	9919329
Added Value =	133810370	154567408	225401058	-87431081	49216055
	0.07	0.06	0.04	-0.10	0.20
15 % of Materials Consumed of Total Output:	155580090	178276819	187776278	187568700	144002452
Materials Consumed * 100 /	321055502	370497668	466602403	146498609	240366291
Total Output =	48.46%	48.12%	40.24%	128.03%	59.91%
16 % of Materials consumed of Added Value:					
Materials Consumed * 100 /	155580090	178276819	187776278	187568700	144002452
Added Value =	133810370	154567408	225401058	-87431081	49216055
	116.27%	115.34%	83.31%	-214.53%	292.59%
17 Total Productivity Measure=	321055502	370497668	466602403	146498609	240366291
Total Output/	265781114	310938035	428312972	124504168	231126921
Total Input =	1.21	1.19	1.09	1.18	1.04
18 System Conversion Efficiency:	165475412	192220849	278826125	-41070091	96363839
Throughput/	110201024	132661216	240536694	-63064532	87124469
(Total Input- Materials consumed) =	1.50	1.45	1.16	0.65	1.11
19 Throughput ratio:	165475412	192220849	278826125	-41070091	96363839
Throughput/	248479163	277708355	267883946	255441315	233851554
Total Manufacturing cost) =	0.67	0.69	1.04	-0.16	0.41
20 Competitive Edge ratio:	165475412	192220849	278826125	-41070091	96363839
Throughput/	250806306	279626178	270131653	258276310	236432699
(Total mfg. cost & WIP av.) =	0.66	0.69	1.03	-0.16	0.41
21 Materials Turn over	321055502	370497668	466602403	146498609	240366291
Total Output/	155580090	178276819	187776278	187568700	144002452
Materials Consumed =	2.06	2.08	2.48	0.78	1.67
22 Unit Labour Cost	26340982	28845578	31080614	33080068	32343047
Labour Cost/	265781114	310938035	428312972	124504168	231126921
Total Input =	0.099	0.093	0.073	0.266	0.140

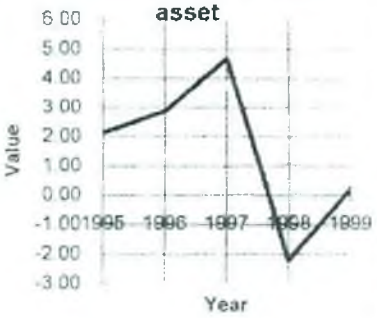
1. Added value per employee



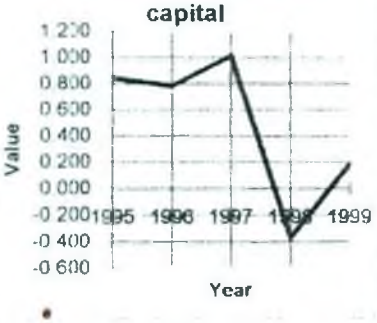
2. Total output per employee



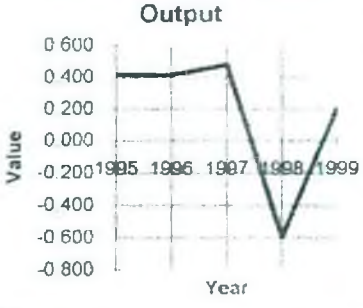
3. Added value to total asset



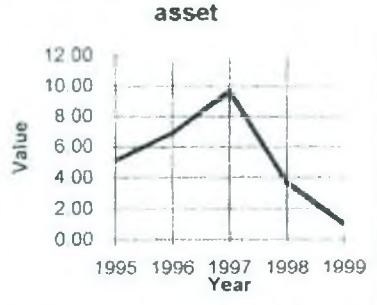
4. Added value to Op. capital



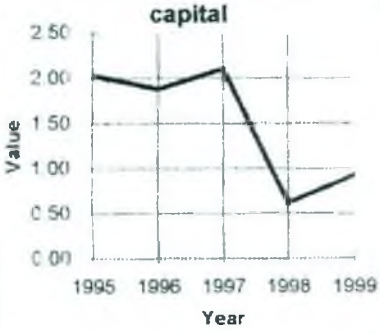
5. Added value to Total Output



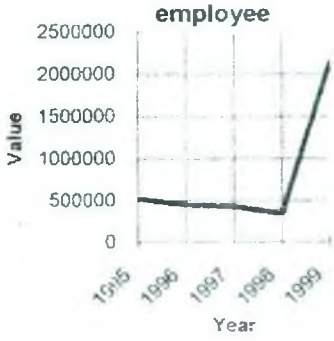
6i. Total output to fixed asset



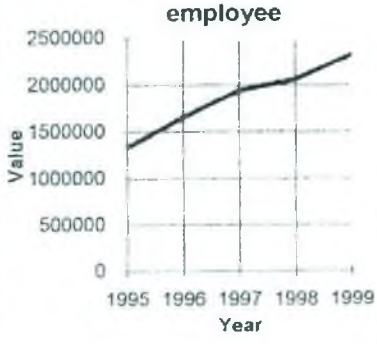
6ii. Total output to Op. capital



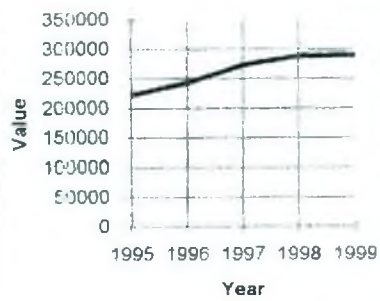
7i. Fixed asset per employee



7ii. Op. capital per employee

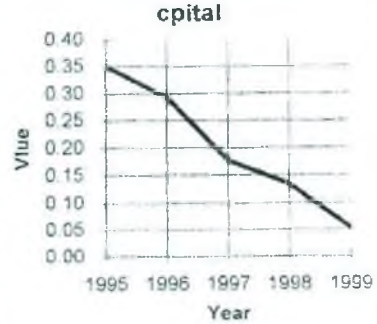


8. Wage Rate

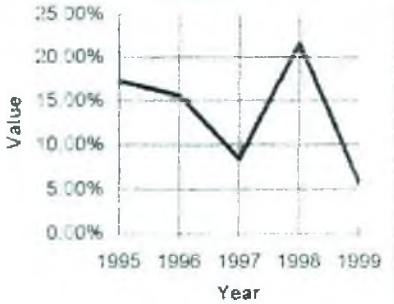


9. Added value to labour cost

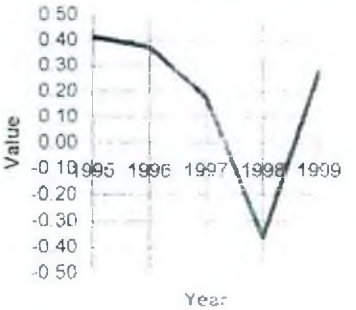
10. Op. profit to Op. cpital



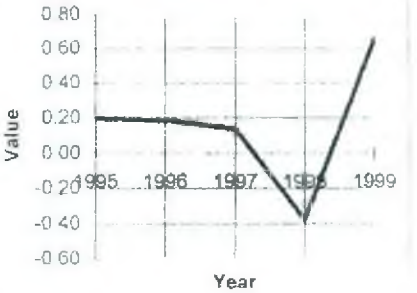
11. Op. profit to Total output



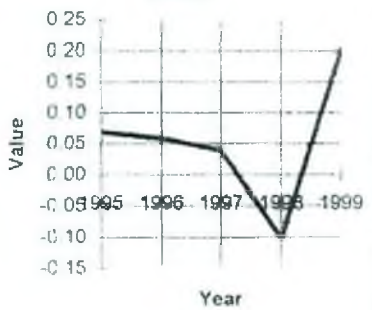
12. Op. profit to Value addition



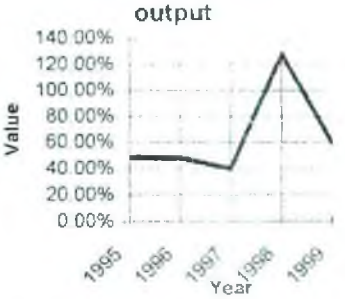
13. Labour cost to added value



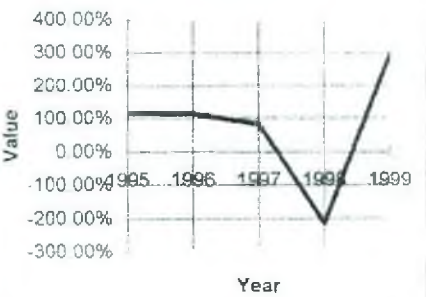
14. Depriciation to added value



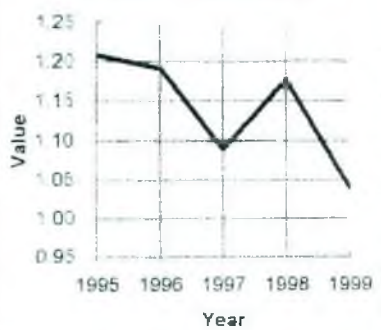
15. % of Material Consumed to total output



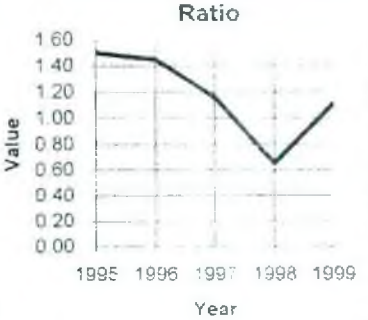
16. % of material consumed to added value



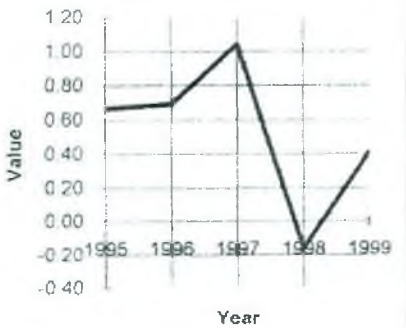
17. Total Productivity



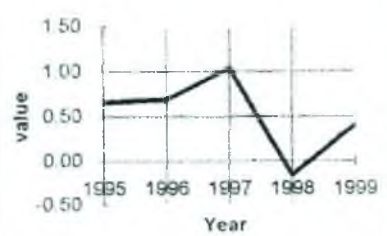
18. System conversion Ratio



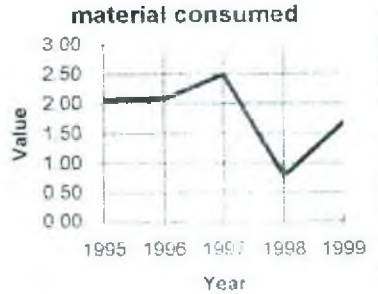
19. Throughput Ratio



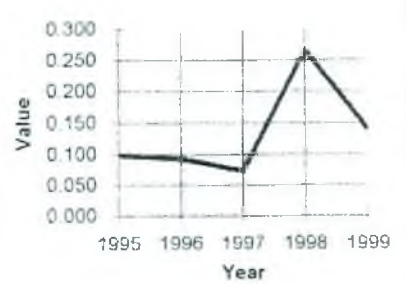
20. Competitive edge ratio



21. Total output to material consumed



22. Unit labour cost



COMPANY PERFORMANCE APPRAISAL(CPA)

	1995	1996	1997	1998	1999
Return on Investment = Net Profit / Total Investment	55371533 / 220862961	57832084 / 250906302	39251982 / 269845424	31728080 / 276536584	13654140 / 49877476
	25.07%	23.05%	14.55%	11.47%	2.74%
Growth Rate(GR)		-8.06%	-36.89%	-21.12%	-76.14%

If the growth rate is decreasing or constant, check the primary and secondary profitability ratios. If the growth rate is increasing, to consolidate the position, check the primary and secondary productivity ratios.

Primary Productivity Ratios:

	1995	1996	1997	1998	1999
i) Total Productivity ratio= Total output / Total input	321055502 / 265781114	370497668 / 310938035	466602403 / 428312972	146498609 / 124504168	240366291 / 231126921
	= 1.21	1.19	1.09	1.18	1.04
ii) Labour Productivity ratio:					
a Value Addition / Total work hours worked	= 133810370 / 285600	154567408 / 285600	225401058 / 273600	-87431081 / 276000	49216055 / 268800
(value addition per hour)	= 468.52	541.20	823.83	-316.78	183.10
b Value Addition / No. of workers	= 133810370.00 / 119	154567408.00 / 119	225401058.00 / 114	-87431081.00 / 115	49216055.00 / 112
(value addition per worker)	= 1124456.89	1298885.78	1977202.26	-760270.27	439429.06
c Value Addition / Salaries and wages	= 133810370 / 26340982	154567408 / 28845528	225401058 / 31080614	-87431081 / 33080068	49216055 / 32343047
(value addition per Tk. of benefit)	= 5.08	5.36	7.25	-2.64	1.52
iii) Capital Productivity ratio:					
a Value Addition / Fixed Asset	= 133810370 / 62597904	154567408 / 53582143	225401058 / 48135711	-87431081 / 39518408	49216055 / 238721556
(value addition per Tk. of fixed asset)	= 2.14	2.88	4.68	-2.21	0.21
b Value Addition / Current Asset	= 133810370 / 158265057	154567408 / 197324159	225401058 / 221709713	-87431081 / 237018176	49216055 / 260053206
(value addition per Tk. of current asse	= 0.85	0.78	1.02	-0.37	0.19
c Value Addition / Total Asset	= 133810370 / 220862961	154567408 / 250906302	225401058 / 269845424	-87431081 / 276536584	49216055 / 498774762
(value addition per Tk. of fixed asset)	= 0.61	0.62	0.84	-0.32	0.10
d Value Addition / Plant and Machinery	= 133810370 / 62597904	154567408 / 53582143	225401058 / 48135711	-87431081 / 39518408	49216055 / 238721556
(value addition per Tk. of plant)	= 2.14	2.88	4.68	-2.21	0.21

Profitability Ratio

a	Net Profit	= 55371533	57832084	39251982	31728080	13654140
	Net Sales	317635282	354156920	373817535	336220832	296889333
		= 0.17	0.16	0.11	0.09	0.05
b	Cost of goods sold	= 248479163	277708355	267883946	255441315	233851554
	Net Sales	317635282	354156920	373817535	336220832	296889333
		= 0.78	0.78	0.72	0.76	0.79
c	Operating Expenses	= 13881731	16888932	18757617	14927369	15071393
	Net Sales	317635282	354156920	373817535	336220832	296889333
		= 0.04	0.05	0.05	0.04	0.05
d	Interest expense	= -74341	-1014511	-2658327	-433623	-4177252
	Net Sales	317635282	354156920	373817535	336220832	296889333
		= 0.00	0.00	-0.01	0.00	-0.01

Secondary Profitability Ratios

a	Total Asset turnover= Net sales	= 317635282	354156920	373817535	336220832	296889333
	Total asset	220862961	250006302	269845424	276536584	498774762
		= 1.44	1.41	1.39	1.22	0.60
b	Accounts receivable turnover:					
	Net sales	= 317635282	354156920	373817535	336220832	296889333
	Accounts receivable	52710504	73036294	124714041	137801549	186225047
		= 6.03	4.85	3.00	2.44	1.59
c	Fixed asset turnover:					
	Net sales	= 317635282	354156920	373817535	336220832	296889333
	Fixed assets	62597904	53582143	48135711	39518408	238721556
		= 5.07	6.61	7.77	8.51	1.24
d	Inventory turnover					
	Net sales	= 317635282	354156920	373817535	336220832	296889333
	Av. inventory	18335871	22455320.5	21087338.5	19052310	22650972.5
		= 17.32	15.77	17.73	17.65	13.11

OPTIMUM MANPOWER

			1999
1	Labour Productivity	= V.A./Manpower	598322.15
2	Sales per Employee	= Sales/Manpower	2650797.62
3	Value Added Ratio	= V.A./Sales	22.57%
4	Labour's Share	= Personnel cost/V.A.	18.66%
5	Personal cost per person	= Personnel cost/Manpower	288,777.21

* Target Manpower keeping all staff and have wage increase at the existing rate

Current Sale	=	296,889,333.00
Sales growth (Assuming last two years average)	=	-11.70%
Target sale after 5 yrs.	=	159,383,908.11
Planned Value Added	=	22.57%
Planned Labour Share	=	18.66%
Planned wage increase (Average of last 2 yrs. wage growth)	=	6.43%

Target Manpower after 5 year	=	17 persons

* If the current manpower is retained, how much to be sold?

Planned value Added	=	Target Sales x Planned value Added
	=	35,975,180.56
Expected personnel cost	=	44,172,509.91
Labour Share	=	Personnel cost/Planned V.A.
	=	122.79%
Planned Sales after 5 years	=	1,048,931,258 Considering original value addition and Labour Share
Sales increase per annum	=	28.72%

* if sales volume and the employee number both can't be changed
what should be the proposed wage rate that to be increased ?

Let the proposed rate of increased = R

The sales volume after 5 years = 159,383,908

$$\text{We have, sales} = \frac{\text{Employee no.x Benefit per employee}(1+R)^5}{\text{Value Addition x \% of labour share}}$$

$$\text{So,} \quad 159,383,908 = \frac{114 \times 288777.21\,(1+R)^5}{22.57\% \times 18.66\%}$$

So, R (Rate of increment) = -27.24%

Annexure 'F'

BOC Bangladesh Limited

DATA SHEET OF THE COMPANY(BOC)

	1995	1996	1997	1998	1999
1 TOTAL OUTPUT :					
TOTAL SALE	604,454,000	680,707,000	754,586,000	842,943,000	1,021,890,000
SALES GROWTH	*0*	*12.62%*	*10.85%*	*11.71%*	*21.23%*
LESS: VAT/EXCISE DUTY	0	0	0	0	0
LESS: DISCOUNT	0	0	0	0	0
NET SALES	*604,454,000*	*680,707,000*	*754,586,000*	*842,943,000*	*1,021,890,000*
LESS: OPENING STOCK FINISHED GOODS	0	0	0	0	0
ADD: CLOSING STOCKS FINISHED GOODS	0	0	0	0	0
LESS: OPENING WIP	0	0	0	0	0
ADD: CLOSING WIP	0	0	0	0	0
LESS: OPENING STOCK RAW/PACKING MATERIA	0	0	0	0	0
ADD: CLOSING STOCKS RAW/PACKING MATERI	0	0	0	0	0
LESS: FINISHED GOODS PURCHASED			0	0	0
ADD: RESEARCH & DEVELOPMENT			0	0	0
	604,454,000	*680,707,000*	*754,586,000*	*842,943,000*	*1,021,890,000*
2 TOTAL INPUT :					
COST OF SALES	355,894,000	441,133,000	490,151,000	525,753,000	642,553,000
LESS: INVENTORY ADJUSTMENT	*0*	*0*	*0*	*0*	*0*
SELLING & ADMIN EXPENDITURE	121,197,000	143,832,000	167,748,000	202,942,000	188,183,000
	477,091,000	*584,965,000*	*657,899,000*	*728,695,000*	*830,736,000*
3 BOUGHT IN MATERIALS & SERVICES :					
MATERIALS CONSUMED	262,835,000	292,215,000	264,989,000	289,667,000	303,121,000
PACKING MATERIAL	0	0	0	0	0
INDIRECT MATERIALS	0	0	0	0	0
FACTORY O/H (EXCLUDING BENEFITS TO WORK	25,695,000	50,040,000	123,192,000	66,601,000	74,864,000
REPAIR & MAINTENANCE	25,677,000	26,333,000	31,918,000	35,772,000	32,551,000
DEPRECIATION	30,219,000	56,394,000	62,467,000	69,349,000	77,511,000
ADMIN & SELLING EXPENSES(EX. BENEFITS)	51,549,000	57,719,000	139,248,000	90,966,000	163,820,000
CHANGE IN RAW MATERIAL INVENTORY	0	0	0	0	0
	395,975,000	*482,701,000*	*621,814,000*	*552,355,000*	*651,867,000*
4 OPERATING PROFIT :					
PROFIT BEFORE INTEREST	*127,363,000*	*95,742,000*	*96,687,000*	*114,248,000*	*191,154,000*
ADD: OTHER INCOME	13,328,000	3,259,000	4,304,000	41,772,000	2,337,000
ADD: NON OPERATING INCOME	0				
ADD: INCREASE/DECREASE IN STOCK	0				
LESS: BANK INTEREST	223,000	11,101,000	17,605,000	22,288,000	30,357,000
LESS: CONTRIBUTION TO WPPF	7,023,000	4,395,000	4,169,000	6,687,000	0
PROFIT BEFORE TAX	*133,445,000*	*83,505,000*	*79,217,000*	*127,045,000*	*163,134,000*
5 OPERATING CAPITAL (AV.) :					
FIXED ASSETS(AVERAGE)	704,047,000	735,949,000	763,748,000	1,009,441,000	1,104,128,000
CURRENT ASSETS(AVERAGE)	209,928,000	287,302,000	276,446,000	287,691,000	300,856,000
	913,975,000	*1,023,251,000*	*1,040,194,000*	*1,297,132,000*	*1,404,984,000*
6 THROUGHPUT :					
TOTAL OUTPUT	*604,454,000*	*680,707,000*	*754,586,000*	*842,943,000*	*1,021,890,000*
LESS: MATERIAL CONSUMED	*262,835,000*	*292,215,000*	*264,989,000*	*289,667,000*	*303,121,000*
	341,619,000	*388,492,000*	*489,597,000*	*553,276,000*	*718,769,000*
7 WAGE AND BENEFITS TO ALL EMPLOYEE	89,818,000	109,160,000	108,136,000	105,916,000	92,108,000
8 NUMBER OF EMPLOYEE	417	417	422	402	405
9 AVERAGE WAGE INCREASE RATE		*22%*	*-2%*	*-3%*	*-14%*
10 MAN-HOUR PRODUCTIVITY	*604*	*680*	*745*	*874*	*1,051*
LABOUR PRODUCTIVITY	*1,449,530*	*1,632,391*	*1,788,118*	*2,096,873*	*2,523,185*
VALUE ADDED LABOUR PRODUCTIVITY	*499,950*	*474,835*	*314,626*	*722,856*	*913,637*
11 MATERIAL CONSUMPTION PERCENTAGE	*43.48%*	*42.93%*	*35.12%*	*34.36%*	*29.66%*
12 TOTAL VALUATION OF PLANT AND MACHINERY (from depreciation schedule)	704,047,000	735,949,000	763,748,000	1,009,441,000	1,104,128,000
13 INTEREST EXPENSES	223,000	11,101,000	17,605,000	22,288,000	30,357,000
14 ACCOUNTS RECEIVABLE	78,405,000	77,671,000	74,800,000	30,360,000	34,354,000
15 AV. INVENTORY :					
Beginning Inventory(Raw Mat.)	19,624,976	34,635,000	48,211,000	14,310,802	63,259,000
Ending Inventory (Raw Mat.)	34,635,000	48,211,000	14,310,802	63,259,000	52,565,000
	27,129,988	*41,423,000*	*31,260,901*	*38,784,901*	*57,912,000*

ADDED VALUE COMPUTATION

	1995	1996	1997	1998	1999
1 TOTAL OUTPUT	604,454,000.00	680,707,000.00	754,586,000.00	842,943,000.00	1,021,890,000.00
2 LESS:					
BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	262,835,000.00	292,215,000.00	264,989,000.00	289,667,000.00	303,121,000.00
PACKING MAT	0.00	0.00	0.00	0.00	0.00
INDIRECT MATERIALS	0.00	0.00	0.00	0.00	0.00
FACTORY O H (EX.BENFITS	25,695,000.00	50,630,000.00	123,192,000.00	66,601,000.00	74,864,000.00
REPAIR & MAINTENANCE	25,677,000.00	26,333,000.00	31,918,000.00	35,772,000.00	32,551,000.00
ADMIN & OTHER EXP	51,549,000.00	57,719,000.00	139,248,000.00	90,966,000.00	163,820,000.00
TOTAL	365,756,000.00	426,307,000.00	559,347,000.00	483,006,000.00	574,356,000.00
VALUE ADDITION (ITEM 1 - ITEM	238,698,000.00	254,400,000.00	195,239,000.00	359,937,000.00	447,534,000.00

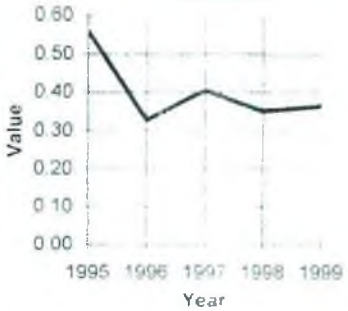
WORKSHEET FOR PRODUCTIVITY RATIOS

	Name of Ratio		1995	1996	1997	1998	1999
1.	Added value per Employee:		238698000	254400000	195239000	359937000	447534000
	Added Value/	=	417	417	422	402	405
	Number of Employee(Av.	=	572417	610072	462652	895366	1105022
2.	Total Output per Employee:		604454000	680707000	754586000	842943000	1021890000
	Total Output/	=	417	417	422	402	405
	No. of Employee(Av.)	=	1449530	1632391	1788118	2096873	2523185
3.	Added Value per Tk. of Fixed Assets:		238698000	254400000	195239000	359937000	447534000
	Added Value/	=	704047000	735949000	763748000	1009441000	1104128000
	Fixed Assets(Av.)	=	0.34	0.35	0.26	0.36	0.41
4.	Added Value per Tk. operational capital:		238698000	254400000	195239000	359937000	447534000
	Added Value/	=	209928000	287302000	276446000	287691000	300856000
	Operational Capital(Av.)	=	1.137	0.885	0.706	1.251	1.488
5.	Added Value to Total Output ratio:		238698000	254400000	195239000	359937000	447534000
	Added value/	=	604454000	680707000	754586000	842943000	1021890000
	Total Output	=	0.395	0.374	0.259	0.427	0.438
6.	Total Output Ratio:		604454000	680707000	754586000	842943000	1021890000
i.	Total Output/	=	704047000	735949000	763748000	1009441000	1104128000
	Fixed Assets(Av.)	=	0.86	0.92	0.99	0.84	0.93
ii.	Total Output/		604454000	680707000	754586000	842943000	1021890000
	Operational Capital(Av.)	=	209928000	287302000	276446000	287691000	300856000
		=	2.88	2.37	2.73	2.93	3.40
7.	Capital per Employee:		704047000	735949000	763748000	1009441000	1104128000
i.	Fixed Assets(Av.)/	=	417	417	422	402	405
	No. of Employee(Av.)	=	1688362	1764866	1809829	2511047	2726242
ii.	Operating Capital/		209928000	287302000	276446000	287691000	300856000
	No. of Employee(Av.)	=	417	417	422	402	405
		=	503424	688974	655085	715649	742854
8.	Wage Rate:		89818000	109160000	108136000	105916000	92108000
	Labour Cost/	=	417	417	422	402	405
	No. of Employee	=	215391	261775	256246	263473	227427

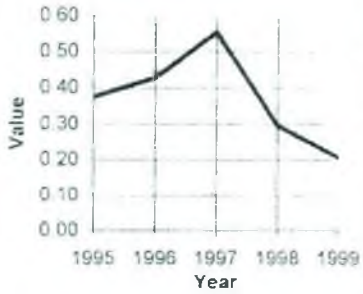
9. Labour Cost Competitiveness:					
Added Value/	238698000	254400000	195239000	359937000	447534000
Labour Cost =	89818000	109160000	108136000	105916000	92108000
	2.66	2.33	1.81	3.40	4.86
10. Operational Profit per Tk of Operating Capital:					
Operating Profit/	133445000	83505000	79217000	127045000	163134000
Operating Capital(Av.) =	209928000	287302000	276446000	287691000	300856000
	0.64	0.29	0.29	0.44	0.54
11. Operating Profit to Total Output	133445000	83505000	79217000	127045000	163134000
Operating Profit/	604454000	680707000	754586000	842943000	1021890000
Total Output =	22.08%	12.27%	10.50%	15.07%	15.96%
12. Operating Profit Share in Added value=	133445000	83505000	79217000	127045000	163134000
Operating Profit /	238698000	254400000	195239000	359937000	447534000
Added Value =	0.56	0.33	0.41	0.35	0.36
13. Labour Share in Added Value:					
Labour Cost /	89818000	109160000	108136000	105916000	92108000
Added value =	238698000	254400000	195239000	359937000	447534000
	0.38	0.43	0.55	0.29	0.21
14. Capital Share in Added Value:					
Capital Cost(Dep.) * 100	30219000	56394000	62467000	69349000	77511000
Added Value =	238698000	254400000	195239000	359937000	447534000
	13%	22%	32%	19%	17%
15. % of Materials Consumed of Total Output:	262835000	292215000	264989000	289667000	303121000
Materials Consumed * 100 /	604454000	680707000	754586000	842943000	1021890000
Total Output =	43.48%	42.93%	35.12%	34.36%	29.66%
16. % of Materials consumed of Added Value					
Materials Consumed * 10 =	262835000	292215000	264989000	289667000	303121000
Added Value	238698000	254400000	195239000	359937000	447534000
	110.11%	114.86%	135.73%	80.48%	67.73%
17. Total Productivity Measure:					
Total Output/	604454000	680707000	754586000	842943000	1021890000
Total Input =	477091000	584965000	657899000	728695000	830736000
	1.27	1.16	1.15	1.16	1.23
18. System Conversion Efficiency:					
Throughput/	341619000	388492000	489597000	553276000	718769000
(Total Input- Materials consun =	214256000	292750000	392910000	439028000	527615000
	1.59	1.33	1.25	1.26	1.36
19. Throughput ratio					
Throughput/	341619000	388492000	489597000	553276000	718769000
Total Manufacturing cost) =	355894000	441133000	490151000	525753000	642553000
	0.96	0.88	1.00	1.05	1.12
20. Competitive Edge ratio:					
Throughput/	341619000	388492000	489597000	553276000	718769000
(Total mfg. cost & WIP av.) =	355894000	441133000	490151000	525753000	642553000
	0.96	0.88	1.00	1.05	1.12
21. Materials Turn over					
Total Output/	604454000	680707000	754586000	842943000	1021890000
Materials Consumed =	262835000	292215000	264989000	289667000	303121000
	2.30	2.33	2.85	2.91	3.37
22. Unit Labour Cost					
Labour Cost/	89818000	109160000	108136000	105916000	92108000
Total Input =	477091000	584965000	657899000	728695000	830736000
	0.188	0.187	0.164	0.145	0.111

11. Op. profit to Total output

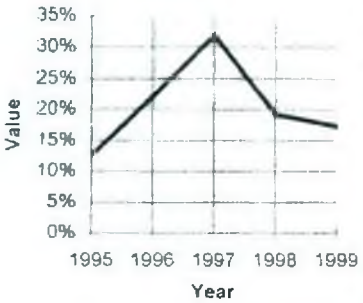
12. Op. profit to Value addition



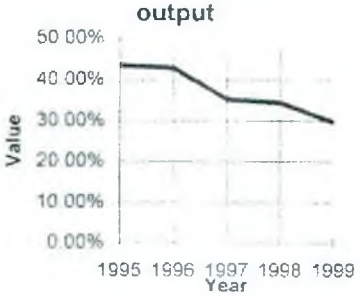
13. Labour cost to added value



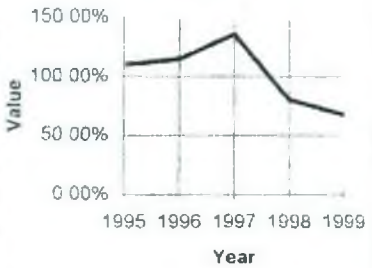
14. Depriciation to added value



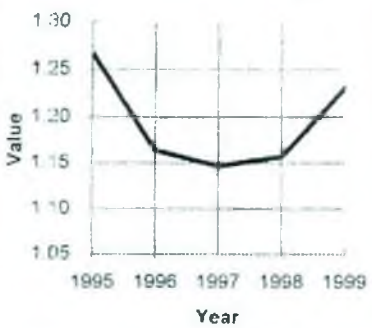
15. % of Material Consumed to total output



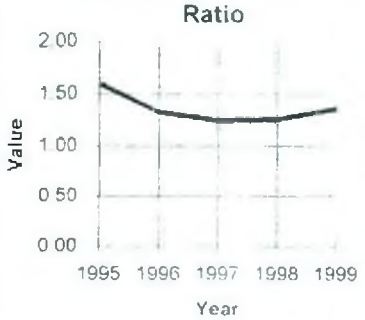
16. % of material consumed to added value



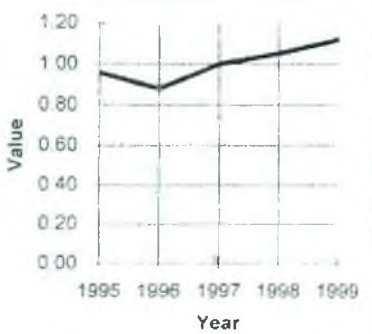
17. Total Productivity



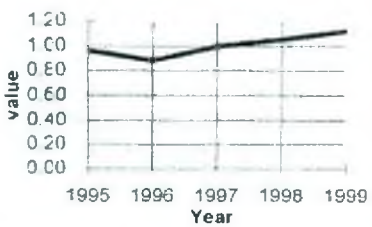
18. System conversion Ratio



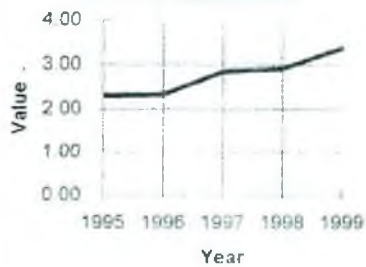
19. Throughput Ratio



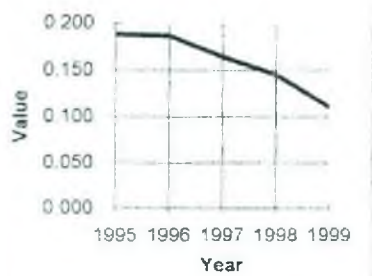
20. Competitive edge ratio



21. Total output to material consumed



22. Unit labour cost



COMPANY PERFORMANCE APPRAISAL(CPA)

	1995	1996	1997	1998	1999
Return on Investment(R = Net Profit / Total Assets	133445000 / 913975000	83505000 / 1023251000	79217000 / 1040194000	127045000 / 1297132000	163134000 / 1404984000
	14.60%	8.16%	7.62%	9.79%	11.61%
Growth Rate(GR) =		-44.11%	-6.68%	28.61%	18.55%

If the growth rate is decreasing or constant, check the primary and secondary profitability ratios. If the growth rate is increasing, to consolidate the position, check the primary and secondary productivity ratios.

Primary Productivity Ratios:

	1995	1996	1997	1998	1999
i) Total Productivity ratio= Total output	604454000	680707000	754586000	842943000	1021890000
Total input	477091000	584965000	657899000	728695000	830736000
=	1.27	1.16	1.15	1.16	1.23
ii) Labour Productivity ratio					
a. Value Addition =	238698000	254400000	195239000	359937000	447534000
Total work hours worked	1000800	1000800	1012800	964800	972000
(value addition per hour) =	238.51	254.20	192.77	373.07	460.43
b. Value Addition =	238698000.00	254400000.00	195239000.00	359937000.00	447534000.00
No. of workers	417	417	422	402	405
(value addition per worker) =	572417.27	610071.94	462651.66	895365.67	1105022.22
c Value Addition =	238698000	254400000	195239000	359937000	447534000
Salaries and wages	89818000	109160000	108136000	105916000	92108000
(value addition per Tk. of benefi =	2.66	2.33	1.81	3.40	4.86
iii) Capital Productivity ratio.					
a. Value Addition =	238698000	254400000	195239000	359937000	447534000
Fixed Asset	704047000	735949000	763748000	1009441000	1104128000
(value addition per Tk. of fixed a =	0.34	0.35	0.26	0.36	0.41
b Value Addition =	238698000	254400000	195239000	359937000	447534000
Current Asset	209928000	287302000	276446000	287691000	300856000
(value addition per Tk. of curren =	1.14	0.89	0.71	1.25	1.49
c Value Addition =	238698000	254400000	195239000	359937000	447534000
Total Asset	913975000	1023251000	1040194000	1297132000	1404984000
(value addition per Tk. of fixed a =	0.26	0.25	0.19	0.28	0.32
d Value Addition =	238698000	254400000	195239000	359937000	447534000
Plant and Machinery	704047000	735949000	763748000	1009441000	1104128000
(value addition per Tk. of plant) =	0.34	0.35	0.26	0.36	0.41

Profitability Ratio

a.	Net Profit	= 133445000	83505000	79217000	127045000	163134000
	Net Sales	604454000	680707000	754586000	842943000	1021890000
		= 0.22	0.12	0.10	0.15	0.16
b.	Cost of goods sold	= 355894000	441133000	490151000	525753000	642553000
	Net Sales	604454000	680707000	754586000	842943000	1021890000
		= 0.59	0.65	0.65	0.62	0.63
c.	Operating Expenses	= 121197000	143832000	167748000	202942000	188183000
	Net Sales	604454000	680707000	754586000	842943000	1021890000
		= 0.20	0.21	0.22	0.24	0.18
d.	Interest expense	= 223000	1110[1]000	17605000	22288000	30357000
	Net Sales	604454000	680707000	754586000	842943000	1021890000
		= 0.00	0.02	0.02	0.03	0.03

Secondary Profitability Ratios

a.	Total Asset turnover= Net sales	= 604454000	680707000	754586000	842943000	1021890000
	Total asset	913975000	1023251000	1040194000	1297132000	1404984000
		= 0.66	0.67	0.73	0.65	0.73
b.	Accounts receivable turnover					
	Net sales	= 604454000	680707000	754586000	842943000	1021890000
	Accounts receivable	78405000	77671000	74800000	30360000	34354000
		= 7.71	8.76	10.09	27.76	29.75
c.	Fixed asset turnover					
	Net sales	= 604454000	680707000	754586000	842943000	1021890000
	Fixed assets	704047000	735949000	763748000	1009441000	1104128000
		= 0.86	0.92	0.99	0.84	0.93
d.	Inventory turnover					
	Net sales	= 604454000	680707000	754586000	842943000	1021890000
	Av. inventory	27129988	41423000	31260901	38784901	57912000
		= 22.28	16.43	24.14	21.73	17.65

OPTIMUM MANPOWER

			1999
1	Labour Productivity	= V.A./Manpower	1105082.28
2	Sales per Employee	= Sales/Manpower	3523185.19
3	Value Added Ratio	= V.A./Sales	43.79%
4	Labour's Share	= Personnel cost/V.A.	16.04%
5	Personal cost per person	= Personnel cost/Manpower	227,427.16

* Target Manpower keeping all staff and have wage increase at the existing rate

Current Sale	=	1,021,890,000.00
Sales growth (Assuming last four years average)	=	14.10%
Target sale after 5 yrs (2004)	=	1,976,350,335.04
Planned Value Added	=	43.79%
Planned Labour Share	=	16.04%
Planned wage increase (Average of last 3 yrs. wage growth)	=	4.32%
Target Manpower after 5 year	=	761 persons

* If the current manpower is retained, how much to be sold?

Planned value Added = Target Sales x Planned value Added

= 865,537,358.07

Expected personnel cost = 73,842,629.12

Labour Share = Personnel cost/Planned V.A.

= 8.53%

Planned Sales after 5 years = 1,095,535,621 Considering original value addition and Labour Share

Sales increase per annum = 1.40%

* if sales volume and the employee number both can't be changed what should be the proposed wage rate that to be increased ?

Let the proposed rate of increased = R

The sales volume after 5 years = 1,976,350,335

$$\text{We have, sales} = \frac{\text{Employee no.x Benefit per employee}(1+R)^5}{\text{Value Addition x \% of labour share}}$$

$$\text{So.} \quad 1,976,350,335 = \frac{405 \times 227427.16\,(1+R)^5}{43.79\% \times 16.04\%}$$

So, R (Rate of increment) = 8.55%

Annexure 'G'

Dulamia Cotton Spinning Mills Limited

DATA SHEET OF THE COMPANY

	1995	1996	1997	1998	1999
1 TOTAL OUTPUT					
TOTAL SALE	150,000,000	160,000,000	178,693,412	184,697,462	185,130,097
SALES GROWTH	*0*	*6.67%*	*11.68%*	*3.36%*	*0.23%*
LESS: VAT/EXCISE DUTY	0	0	0	0	0
LESS: DISCOUNT	0	0	0	0	0
NET SALES	*150,000,000*	*160,000,000*	*178,693,412*	*184,697,462*	*185,130,097*
LESS: OPENING STOCK FINISHED GOODS	51,266	3,000,000	4,568,499	7,856,466	5,942,305
ADD: CLOSING STOCKS FINISHED GOODS	3,000,000	4,568,499	7,856,466	5,942,305	2,740,854
LESS: OPENING WIP	1,032,303	1,032,303	1,818,485	3,392,325	3,688,403
ADD: CLOSING WIP	1,032,303	1,818,485	3,392,325	3,688,403	2,811,215
LESS: OPENING STOCK RAW/PACKING MATERIALS	0	0	0	0	0
ADD: CLOSING STOCKS RAW/PACKING MATERIALS	0	0	0	0	0
LESS: FINISHED GOODS PURCHASED	0	0	0	0	0
ADD: RESEARCH & DEVELOPMENT	0	0	0	0	0
ADD: SAMPLE	0	0	0	0	0
	152,948,734	*161,568,499*	*183,555,219*	*183,079,379*	*181,051,458*
2 TOTAL INPUT					
TOTAL MANUFACTURING COST	130,000,000	140,000,000	157,013,557	156,235,635	152,943,973
INVENTORY ADJUSTMENT	2,948,734	2,354,681	4,861,807	-1,618,083	-4,078,639
SELLING & ADMIN EXPENDITURE	1,083,570	4,867,838	9,545,661	7,747,259	7,931,159
	134,032,304	*147,222,519*	*171,421,025*	*162,364,811*	*156,796,493*
3 BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	110,000,000	121,000,000	130,649,822	120,253,415	115346076
PACKING MATERIAL	555,576	134,000	2,048,835	1,840,326	2,602,981
INDIRECT MATERIALS	0	0	0	0	0
FACTORY O H (EXCLUDING BENEFITS TO WORKER)	801,046	1,529,595	12,410,906	15,152,696	30,292,193
REPAIR & MAINTENANCE	0	0	300,783	120,016	211,842
DEPRECIATION	5,862,117	3,296,832	19,763,429	17,934,010	16,363,403
ADMIN & SELLING EXPENSES(EX. BENEFITS)	965,549	1,571,006	2,775,341	2,715,903	2,665,893
CHANGE IN RAW MATERIAL INVENTORY	0	0	0	0	0
	116,184,288	*127,531,433*	*167,949,116*	*158,016,366*	*52,136,312*
4 OPERATING PROFIT					
PROFIT BEFORE INTEREST	*18,916,430*	*14,345,980*	*12,134,194*	*20,714,568*	*24,254,965*
ADD: OTHER INCOME	320	43,613	0	0	0
ADD: NON OPERATING INCOME					
ADD: INCREASE/DECREASE IN STOCK	0				
LESS: BANK CHARGE/INTEREST	45,000,000	50,000,000	63,011,800	62,436,136	39,885,262
LESS: CONTRIBUTION TO WPPF	0	0	0	0	0
PROFIT BEFORE TAX	*-26,083,250*	*-35,610,407*	*-50,877,606*	*-41,721,568*	*-15,630,297*
5 OPERATING CAPITAL (AV.)					
FIXED ASSETS(AVERAGE)	212,885,340	210,885,340	210,885,340	193,924,751	177,884,242
CURRENT ASSETS(AVERAGE)	15,230,851	39,151,675	84,342,675	81,678,127	95,329,571
	228,116,191	*250,037,015*	*295,228,015*	*275,602,878*	*273,213,813*
6 THROUGHPUT					
TOTAL OUTPUT	*152,948,734*	*161,568,499*	*183,555,219*	*183,079,379*	*181,051,458*
LESS: MATERIAL CONSUMED	*110,555,576*	*121,134,000*	*132,698,657*	*122,093,741*	*32,895,174*
	42,393,158	*40,434,499*	*50,856,562*	*60,985,638*	*148,156,284*
7 WAGE AND BENEFITS TO ALL EMPLOYEE	17,000,000	18,000,000	20,934,762	22,282,455	21,431,056
8 NUMBER OF EMPLOYEE	840	850	860	891	881
9 AVERAGE WAGE INCREASE RATE		*5%*	*15%*	*3%*	*-3%*
10 MAN-HOUR PRODUCTIVITY	*74*	*78*	*87*	*86*	*88*
LABOUR PRODUCTIVITY	*178,571*	*188,235*	*207,783*	*207,292*	*210,136*
VALUE ADDED LABOUR PRODUCTIVITY	*44,855*	*41,152*	*35,474*	*50,073*	*38,605*
11 MATERIAL CONSUMPTION PERCENTAGE	*73.70%*	*75.71%*	*74.26%*	*66.10%*	*17.77%*
12 TOTAL VALUATION OF PLANT AND MACHINERY (from depreciation schedule)	244,896,518	227,845,929	210,885,340	193,924,751	177,884,242
13 INTEREST EXPENSES	45,000,000	50,000,000	63,011,800	62,436,136	39,885,262
14 ACCOUNTS RECEIVABLE	18,000,000	20,000,000	25,533,644	20,244,359	21,213,774
15 AV. INVENTORY:					
Beginning Inventory(Raw Mat.)	51,266	3,000,000	4,568,499	7,856,466	5,942,305
Ending Inventory (Raw Mat.)	3,000,000	4,568,499	7,856,466	5,942,305	2,740,854
	1,525,633	*3,784,250*	*6,212,483*	*6,899,386*	*4,341,580*

ADDED VALUE COMPUTATION

PARTICULARS	1995	1996	1997	1998	1999
1 TOTAL OUTPUT	152,948,734	161,568,499	183,555,219	183,079,379	181,051,458
2 LESS					
BOUGHT IN MATERIALS & SERVICES					
MATERIALS CONSUMED	110,000,000	121,000,000	130,649,822	120,253,415	115,346,076
PACKING MAT.	555,576	134,000	2,048,835	1,840,326	2,602,981
INDIRECT MATERIALS	0	0	0	0	0
FACTORY OH (EX.BENEFITS TO WOR	801,046	1,529,595	12,410,906	15,152,696	30,292,193
REPAIR & MAINTENANCE	0	0	300,783	120,016	211,842
ADMIN & OTHER EXP (EX. BENEFITS	965,549	1,571,006	2,775,341	2,715,903	2,665,893
INVENTORY ADJUSTMENT	2,948,734	2,354,681	4,861,807	(1,618,083)	(4,078,639)
TOTAL	115,270,905.00	126,589,282.00	153,047,494.00	138,464,273.00	147,040,346.00
VALUE ADDITION (ITEM 1 - ITEM 2)	37,677,829	34,979,217	30,507,725	44,615,106	34,011,112

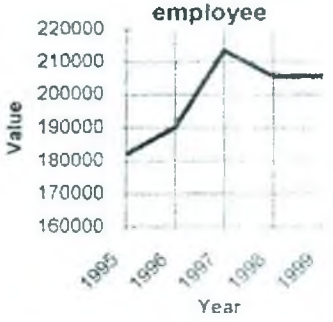
WORKSHEET FOR PRODUCTIVITY RATIOS

	Name of Ratio		1995	1996	1997	1998	1999
1.	Added value per Employee:		37677829	34979217	30507725	44615106	34011112
	Added Value/	=	840	850	860	891	881
	Number of Employee(Av.	=	44855	41152	35474	50073	38605
2.	Total Output per Employee:		152948734	161568499	183555219	183079379	181051458
	Total Output/	=	840	850	860	891	881
	No. of Employee(Av.)	=	182082	190081	213436	205476	205507
3.	Added Value per Tk. of Fixed Assets:		37677829	34979217	30507725	44615106	34011112
	Added Value/	=	212885340	210885340	210885340	193924751	177884242
	Fixed Assets(Av.)	=	0.18	0.17	0.14	0.23	0.19
4.	Added Value per Tk. operational capital:		37677829	34979217	30507725	44615106	34011112
	Added Value/	=	15230851	39151675	84342675	81678127	95329571
	Operational Capital(Av.)	=	2.474	0.893	0.362	0.546	0.357
5.	Added Value to Total Output ratio:		37677829	34979217	30507725	44615106	34011112
	Added value/	=	152948734	161568499	183555219	183079379	181051458
	Total Output	=	0.246	0.216	0.166	0.244	0.188
6.	Total Output Ratio:		152948734	161568499	183555219	183079379	181051458
i.	Total Output/	=	212885340	210885340	210885340	193924751	177884242
	Fixed Assets(Av.)	=	0.72	0.77	0.87	0.94	1.02
ii.	Total Output/		152948734	161568499	183555219	183079379	181051458
	Operational Capital(Av.)	=	15230851	39151675	84342675	81678127	95329571
		=	10.04	4.13	2.18	2.24	1.90
7.	Capital per Employee:		212885340	210885340	210885340	193924751	177884242
i.	Fixed Assets(Av.)/	=	840	850	860	891	881
	No. of Employee(Av.)	=	253435	248100	245216	217648	201912
ii.	Operating Capital/		15230851	39151675	84342675	81678127	95329571
	No. of Employee(Av.)	=	840	850	860	891	881
		=	18132	46061	98073	91670	108206
8.	Wage Rate:		17000000	18000000	20934762	22282455	21431056
	Labour Cost/	=	840	850	860	891	881
	No. of Employee	=	20238	21176	24343	25008	24326

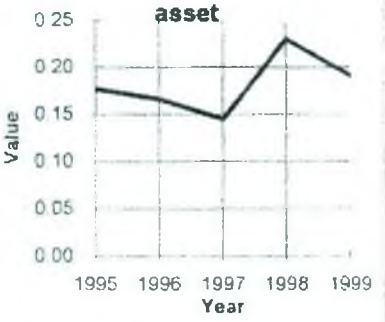
9. Labour Cost Competitiveness						
Added Value/		37677829	34979217	30507725	44615106	34011112
Labour Cost	=	17000000	18000000	20934762	22282455	21431056
	=	2.22	1.94	1.46	2.00	1.59
10. Operational Profit per Tk of Operating Capital:						
		-26083250	-35610407	-50877606	-41721568	-15630297
Operating Profit/	=	15230851	39151675	84342675	81678127	95329571
Operating Capital(Av.)	=	-1.71	-0.91	-0.60	-0.51	-0.16
11. Operating Profit to Total Output		-26083250	-35610407	-50877606	-41721568	-15630297
	=	152948734	161568499	183555219	183079379	181051458
Operating Profit/	=	-17.05%	-22.04%	-27.72%	-22.79%	-8.63%
Total Output						
12. Operating Profit Share in Added value=		-26083250	-35610407	-50877606	-41721568	-15630297
	=	37677829	34979217	30507725	44615106	34011112
Operating Profit /	=	-0.69	-1.02	-1.67	-0.94	-0.46
Added Value						
13. Labour Share in Added Value		17000000	18000000	20934762	22282455	21431056
Labour Cost /	=	37677829	34979217	30507725	44615106	34011112
Added value	=	0.45	0.51	0.69	0.50	0.63
14. Capital Share in Added Value		3862117	3296832	19763429	17934010	16363403
Capital Cost(Dep.) * 100	=	37677829	34979217	30507725	44615106	34011112
Added Value	=	0.10	0.09	0.65	0.40	0.48
15. % of Materials Consumed of Total Output		110555576	121134000	132698657	122093741	117949057
Materials Consumed * 100 /	=	152948734	161568499	183555219	183079379	181051458
Total Output	=	72.28%	74.97%	72.29%	66.69%	65.15%
16. % of Materials consumed of Added Value		110555576	121134000	132698657	122093741	117949057
Materials Consumed * 10	=	37677829	34979217	30507725	44615106	34011112
Added Value	=	293.42%	346.30%	434.97%	273.66%	346.80%
17. Total Productivity Measure=		152948734	161568499	183555219	183079379	181051458
Total Output/	=	134032304	147222519	171421025	162364811	156796493
Total Input	=	1.14	1.10	1.07	1.13	1.15
18. System Conversion Efficiency		42393158	40434499	50856562	60985638	148156284
Throughput/	=	23476728	26088519	38722368	40271070	38847436
(Total Input- Materials consu	=	1.81	1.55	1.31	1.51	3.81
19. Throughput ratio.		42393158	40434499	50856562	60985638	148156284
Throughput/	=	130000000	140000000	157013557	156235635	152943973
Total Manufacturing cost)	=	0.33	0.29	0.32	0.39	0.97
20. Competitive Edge ratio		42393158	40434499	50856562	60985638	148156284
Throughput/	=	131032303	141818485	160405882	159924038	154349581
(Total mfg. cost & WIP av.)	=	0.32	0.29	0.32	0.38	0.96
21. Materials Turn over		152948734	161568499	183555219	183079379	181051458
Total Output/	=	110555576	121134000	132698657	122093741	117949057
Materials Consumed	=	1.38	1.33	1.38	1.50	1.53
22. Unit Labour Cost		17000000	18000000	20934762	22282455	21431056
Labour Cost/	=	134032304	147222519	171421025	162364811	156796493
Total Input	=	0.127	0.122	0.122	0.137	0.137

1. Added value per employee

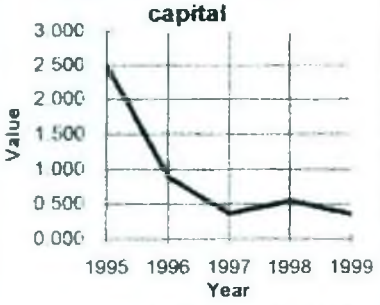
2. Total output per employee



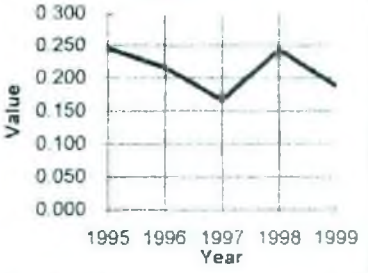
3. Added value to total asset



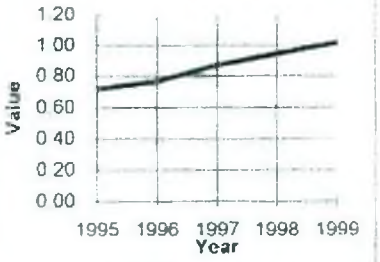
4. Added value to Op. capital



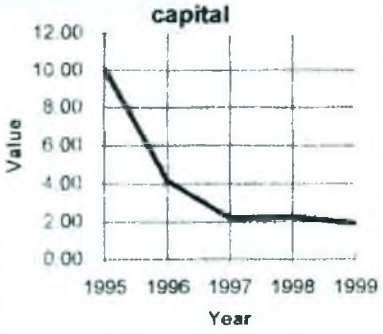
5. Added value to Total Output



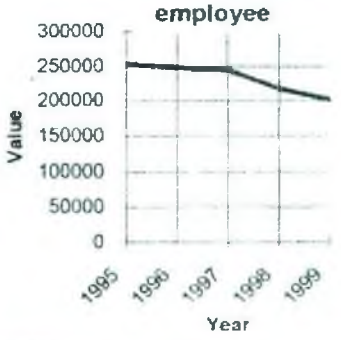
6i. Total output to fixed asset



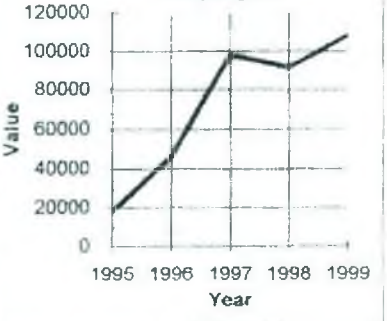
6ii. Total output to Op. capital



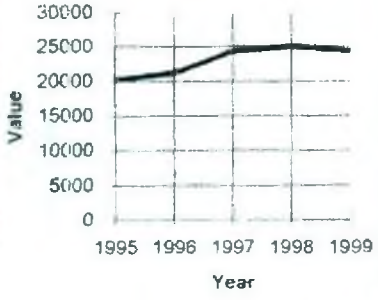
7i. Fixed asset per employee



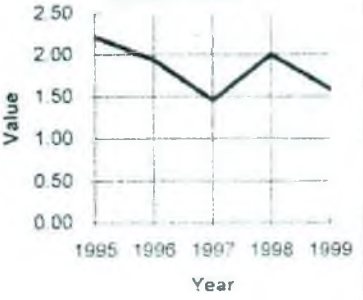
7ii. Op. capital per employee



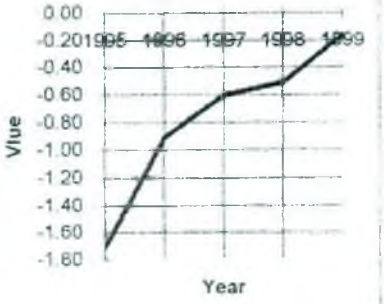
8. Wage Rate



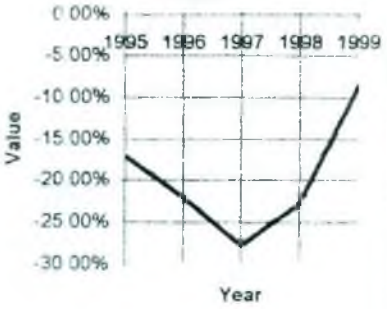
9. Added value to labour cost



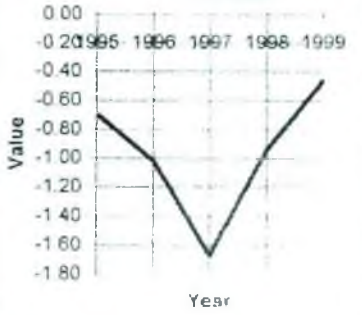
10. Op. profit to Op. cpital



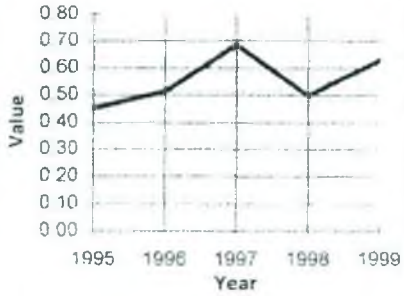
11. Op. profit to Total output



12. Op. profit to Value addition

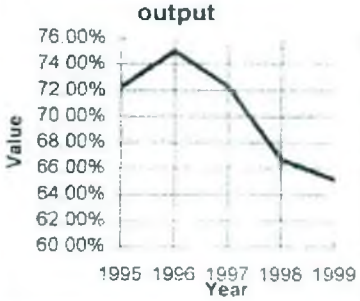


13. Labour cost to added value

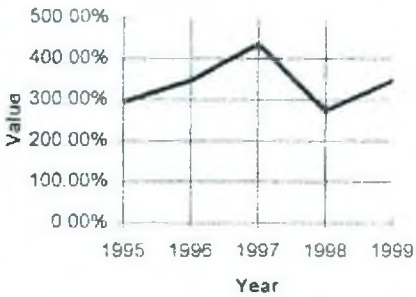


14. Depriciation to added value

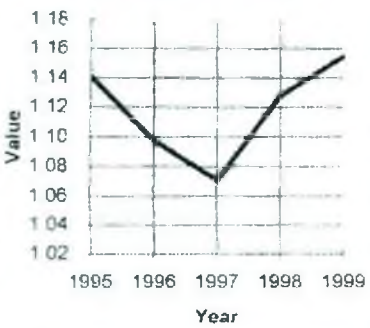
15. % of Material Consumed to total output



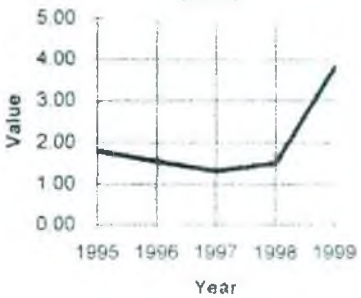
16. % of material consumed to added value



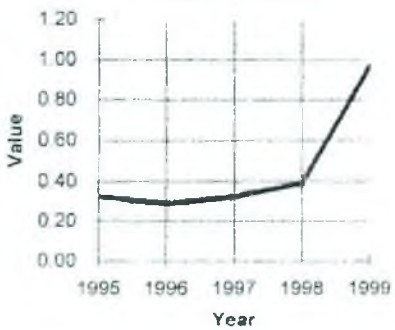
17. Total Productivity



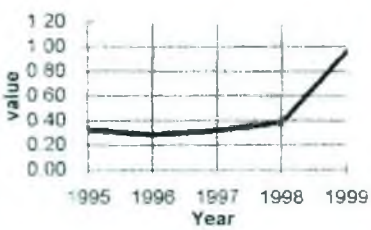
18. System conversion Ratio



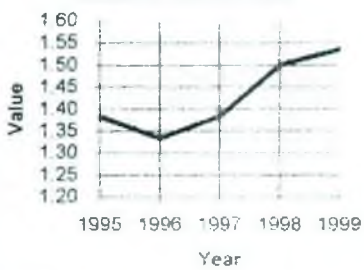
19. Throughput Ratio



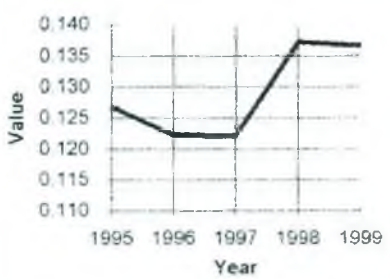
20. Competitive edge ratio



21. Total output to material consumed



22. Unit labour cost



COMPANY PERFORMANCE APPRAISAL(CPA)

		1995	1996	1997	1998	1999
Return on Investment(R	Net Profit	-26083250	-35610407	-50877606	-41721568	-15630297
	Total Assets	228116191	250037015	295228015	275602878	273213813
		-11.43%	-14.24%	-17.23%	-15.14%	-5.72%
Growth Rate(GR)			-24.56%	-21.00%	12.16%	62.21%

If the growth rate is decreasing or constant, check the primary and secondary profitability ratios. If the growth rate is increasing, to consolidate the position, check the primary and secondary productivity ratios.

Primary Productivity Ratios

		1995	1996	1997	1998	1999
i) Total Productivity ratio=	Total output	152948734	161568499	183555219	183079379	181051458
	Total input	134032304	147222519	171421025	162364811	156796493
		= 1.14	1.10	1.07	1.13	1.15
ii) Labour Productivity ratio						
a Value Addition		= 37677829	34979217	30507725	44615106	34011112
Total work hours worked		2016000	2040000	2064000	2138400	2114400
(value addition per hour)		= 18.69	17.15	14.78	20.86	16.09
b Value Addition		= 37677829.00	34979217.00	30507725.00	44615106.00	34011112.00
No. of workers		840	850	860	891	881
(value addition per worker)		= 44854.56	41152.02	35474.10	50073.07	38605.12
c Value Addition		= 37677829	34979217	30507725	44615106	34011112
Salaries and wages		17000000	18000000	20934762	22282455	21431056
(value addition per Tk. of benefit)		= 2.22	1.94	1.46	2.00	1.59
iii) Capital Productivity ratio						
a Value Addition		= 37677829	34979217	30507725	44615106	34011112
Fixed Asset		212885340	210885340	210885340	193924751	177884242
(value addition per Tk. of fixed asset)		= 0.18	0.17	0.14	0.23	0.19
b Value Addition		= 37677829	34979217	30507725	44615106	34011112
Current Asset		15230851	39151675	84342675	81678127	95329571
(value addition per Tk. of current asset)		= 2.47	0.89	0.36	0.55	0.36
c Value Addition		= 37677829	34979217	30507725	44615106	34011112
Total Asset		228116191	250037015	295228015	275602878	273213813
(value addition per Tk. of fixed asset)		= 0.17	0.14	0.10	0.16	0.12
d Value Addition		37677829	34979217	30507725	44615106	34011112
Plant and Machinery		244806518	227845929	210885340	193924751	177884242
(value addition per Tk. of plant)		= 0.15	0.15	0.14	0.23	0.19

Profitability Ratio

a.	Net Profit / Net Sales	= -26083250 / 150000000	-35610407 / 160000000	-50877606 / 178693412	-41721568 / 184697462	-15630297 / 185130097
		= -0.17	-0.22	-0.28	-0.23	-0.08
b	Cost of goods sold / Net Sales	= 130000000 / 150000000	140000000 / 160000000	157013557 / 178693412	156235635 / 184697462	152943973 / 185130097
		= 0.87	0.88	0.88	0.85	0.83
c.	Operating Expenses / Net Sales	= 1083570 / 150000000	4867838 / 160000000	9545661 / 178693412	7747259 / 184697462	7931159 / 185130097
		= 0.01	0.03	0.05	0.04	0.04
d.	Interest expense / Net Sales	= 45000000 / 150000000	50000000 / 160000000	63011800 / 178693412	62436136 / 184697462	39885262 / 185130097
		= 0.30	0.31	0.35	0.34	0.22

Secondary Profitability Ratios

a.	Total Asset turnover= Net sales / Total asset	= 150000000 / 228116191	160000000 / 250037015	178693412 / 295228015	184697462 / 275602878	185130097 / 273213813
		= 0.66	0.64	0.61	0.67	0.68
b	Accounts receivable turnover: Net sales / Accounts receivable	= 150000000 / 18000000	160000000 / 20000000	178693412 / 25533644	184697462 / 20244359	185130097 / 21213774
		= 8.33	8.00	7.00	9.12	8.73
c	Fixed asset turnover: Net sales / Fixed assets	= 150000000 / 212885340	160000000 / 210885340	178693412 / 210885340	184697462 / 193924751	185130097 / 177884242
		= 0.70	0.76	0.85	0.95	1.04
d.	Inventory turnover: Net sales / Av. inventory	= 150000000 / 1525633	160000000 / 3784249.5	178693412 / 6212482.5	184697462 / 6899385.5	185130097 / 4341579.5
		= 98.32	42.28	28.76	26.77	42.64

OPTIMUM MANPOWER

				1999
1	Labour Productivity	=	V.A./Manpower	38605.12
2	Sales per Employee	=	Sales/Manpower	210136.32
3	Value Added Ratio	=	V.A./Sales	18.37%
4	Labour's Share	=	Personnel cost/V.A.	14.57%
5	Personal cost per person	=	Personnel cost/Manpower	24,342.75

* Target Manpower keeping all staff and have wage increase at the existing rate

Current Sale	=	178,693,412
Sales growth (Assuming last two years average)	=	1.80%
Target sale after 5 yrs.	=	195,337,536
Planned Value Added	=	18.37%
Planned Labour Share	=	14.57%
Planned wage increase (Average of last 3 yrs. wage growth)	=	4.99%
Target Manpower after 5 year	=	168 persons

* If the current manpower is retained, how much to be sold?

Planned value Added	=	Target Sales x Planned value Added
	=	35,886,368
Expected personnel cost	=	27,352,403
Labour Share	=	Personnel cost/Planned V.A.
	=	76.22%
Planned Sales after 5 years	=	997,165,319 Considering original value addition and Labour Share
Sales increase per annum	=	41.04%

* if sales volume and the employee number both can't be changed what should be the proposed wage rate that to be increased ?

Let the proposed rate of increased = R

The sales volume after 5 years = 195,337,536

$$\text{We have, sales} = \frac{\text{Employee no.x Benefit per employee}(1+R)^{5}}{\text{Value Addition x \% of labour share}}$$

$$\text{So, } 195,337,536 = \frac{860 \times 24342.75\,(1+R)^{5}}{18.37\% \times 14.57\%}$$

So, R (Rate of increment) = -24.22%

Comparison of major indicators of the Companies

Major indicators of the companies are compared. From the comparison, it is revealed that profitability trend like Operating profit of AB Bank Ltd. ACI Ltd. and Dulamia Cotton Spinning Mills Ltd. are negative while it is positive in BOC Bangladesh Ltd. and Bangladesh Lamps Ltd. Total Productivity trend is positive to BOC Bangladesh Ltd. and Dulamia Cotton. The profitability and productivity is only positive in Dulamia Cotton. The interesting fact is that the operating profit of Dulamia Cotton inb1998 was negative. In 1999, it showed a positive trend but still to touch the Break even point.

The Added value of all the enterprises except Dulamia showed a positive trend. The material productivity is only positive in case of AB Bank Limited.

The wage rate is positive in case of AB Bank and Bangladesh Lamps ltd.

The return on investment is positive to all the enterprises in 1999 except Dulamia Cotton Ltd.

BOC Bangladesh Limited and Bangladesh Lamps demonstrate a positive trend in case operating profit. Bangladesh Lamps and Dulamia Cotton show a positive trend in case of operating expenses. AB Bank, Lamps BOC and ACI limited show a positive trend in paying the interest expenses. Cost of Goods Sold(COGS) is positive in case of AB Bank, BOC Ltd. and ACI Limited.

Accounts receivable is positive for AB, BOC and ACI Limited. The Inventory turnover is negative for AB, BOC, Bangladesh Lamps Ltd.

Trends of Different Key factors for the year 1999													
Sl no.	Name of the company	Added value to output	Total Productivity	Material productivity	Wage Rate	Return on investment	Operating Profit	Operating Expenses	Interest Expenses	Cost of goods Sold	Accounts Receivable	Inventory Turn Over	Growth Rate
1.	AB Bank Limited	+	-	+	+	+	-	-	+	+	+	-	-
2.	BOC Bangladesh Limited	+	+	-	-	+	+	-	+	+	+	-	-
3.	ACI Ltd.	+	-	-	-	+	-	-	-	+	+	+	-
4.	Bangladesh Lamps Ltd.	+	-	-	+	+	+	+	+	-	-	-	-
5.	Dulamia Cotton Spinning Mills Limited	-	+	-	-	-	-	+	-	-	-	+	+

Annexure 'I'

General Recommendations

Due to globalisation and liberal policy of the Government, the competition in the market is getting harder and harder.

Considering the overall situation, following recommendations are made for the improvement of profitability and productivity of the enterprises:

Reduction of Cost

a. The cost components need to be reviewed. The input costs to be monitored throughout the year. The major cost is the manpower cost. With proper loading, the utilisation of the manpower has to ensure. The high performers to be rewarded and the bad performers have to be punished.

b. The cost of fund/interest rate is getting more. This is reducing the gap between the income and expenditure. One has to be sanguine about the utilisation of borrowing funds

c. The Asset acquisition to be monitored carefully. All procurement should have a fair guideline. Competitive arrangement should be made to get lower value with desired quality.

d. The components of the overheads to be studied item by item to find their justification.

HRD activities

a. The man behind the machine plays the vital role. Nothing will bring desired result of the manpower is not trained and motivated. The skill level of the manpower has to be increased with proper training at home and abroad. Appropriate development programmes to be undertaken by the companies. Each employee has to be assessed to see her/his potentiality. The weaknesses to be removed with proper guidance and training.

b. To retain the manpower, benefits should be comparable with the other companies. To motivate personnel, not only the cash benefits, other tools like recognition, promotion, job rotation etc. to be introduced. To have long term attachment with the companies, long term loan, like House Building, furniture and other loans have to be introduced from early stage of the service (after the service is permanent). This type of loan in one hand is secured for the companies and on the other hand this will ensure the future adherence of the employee to the enterprises.

c. The Companies should have clear mission and vision and give their employees a future direction.

d. Developing future business plans and relates this with the human strategies. The business will determine the quality and need of the manpower.

e. The performance evaluation of the Companies needs to be modified. Appropriate modern techniques to be followed.

f. There should be continuing professional development programmes. More specifically all employee of the enterprises should made clear about the following:

- Vision of the enterprise
- Mission of the enterprise
- Policy of the enterprise

Through these, the employees will be able to see their position in a wider spectrum.

Business Strategy

The business strategy has to be translated in relation with the manpower strategy. Long (5 years) and yearly business plans to be drawn so that appropriate strategies can be undertaken by the respective enterprises.

Target

The target to be fixed up with care so that it is specific, measurable, attainable, realistic and time bound.

Manpower Loading

Time utilisation of the manpower should be calculated to find out the idle time. Time wasters to be removed so that the utilisation can be increased.

Increasing the market share

a. The decision making time should be faster. Customers want faster decision.

b. Strong research and development team to be engaged to review the performance of the enterprises and as well as the activities of other enterprises. The research could unveil the differences.

c. The marketing activities need to be strengthened. Marketing research to be carried out throughout the year to guess the clients need. The interaction with the clients will also make them feel that they are being cared and their views are being considered. This will improve the confidence.

d. Marketing promotion schemes to be undertaken. Not only advertisement, personalised campaigns to be strengthened.

e. New products having higher value addition to be searched and introduced.

Annexure 'J'

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