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**BENCHMARKING,
GOOD MANUFACTURING PRACTICE
AND PERFORMANCE ASSESSMENT
IN THE FOOTWEAR INDUSTRY**

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*This document has been prepared without formal editing.

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LIST OF SYMBOLS AND ABBREVIATIONS

BFA	BRITISH FOOTWEAR ASSOCIATION
CAD	computer-aided design
China	People's Republic of China
CTC	CENTRE TECHNIQUE CUIR CHAUSSURE MAROQUINERIE, Lyon/France
CTC	CENTRO TECNOLÓGICO DO CALÇADO, Portugal
EU	European Union
GMP	good manufacturing practice
HRM	human resource management
INESCOP	INSTITUTO ESPAÑOL DEL CALZADO Y CONEXAS ASOCIACION DE INVESTIGACION, Elche/Spain
ISO	International Organization for Standardization
IT	information technology
m ²	square meter (= 10.76 square feet – sq. ft)
min	minute (60 seconds = 1/60 hour)
RSI	repetitive stress injury
R&D	Research and development
SATRA	SATRA FOOTWEAR TECHNOLOGY CENTRE, Kettering/United Kingdom
UK	United Kingdom
UN	United Nations [Organization]
UNIDO	UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATIONS
USA	United States of America
US\$	United States dollars
@	denotes “unit”

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PREFACE

Performance can be assessed; moreover, *performance is usually measured* when any adjective is used in context of activities, their results or outputs. Such assessments are normally based on some comparison – with (preset) targets, expectations, and similar or other activities.

In market economies, specifically within (the present global) competitive market conditions actual performance of businesses is measured by the (international) market itself: efficient operations remain in business, produce profit and have potential to develop. In case of productive sectors of the economy, namely the agriculture, the industry, the trade and services such assessment having a post-facto character carries the risk of being late, i.e. it may jeopardize the business itself if it does not have sufficient resources to take corrective actions. Specifically assessment of industrial entities such as (sub)sectors, companies and production units plays an important role for governments and managements as its – timely obtained – results enable decision makers to initiate necessary actions. Comparing performance with market leaders, learning from good manufacturing practice are especially useful tools in technology transfer and providing technical assistance (primarily to developing countries), which is the mandate of the UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATIONS (UNIDO). Furthermore, UNIDO being a neutral international organization (specialized agency) is probably one of the most authentic bodies to co-measure industrial performance.

The above considerations triggered the preparation of this study. In order to demonstrate practical applicability and usefulness of benchmarking, revealing good manufacturing practices and how they can serve performance assessment in the industry, the paper is focusing – as an example – on footwear manufacturing and trade. UNIDO is planning to extend the scope of benchmarks and good manufacturing practice towards other subsectors of the leather-based industry, particularly to leather goods and leather garment manufacturing. At the same time continues updating of related databases and parameters will be required, so they could effectively be applied in sectoral surveys, assessing industrial potentials and to measure the impact of technical assistance.

In the course of preparing this survey and compiling benchmark information was collected from several industrialized countries featuring highest productivity and producing best quality of footwear. The contribution made through interviews with key specialists of the following organizations deserves special thanks: BRITISH FOOTWEAR ASSOCIATION (BFA) – United Kingdom (UK); CENTRE TECHNIQUE CUIR CHAUSSURE MAROQUINERIE (CTC) – France; CENTRO TECNOLÓGICO DO CALÇADO (CTC) – Portugal; SATRA FOOTWEAR TECHNOLOGY CENTRE – UK; INSTITUTO ESPAÑOL DEL CALZADO Y CONEXAS ASOCIACION DE INVESTIGACION (INESCOP) – Spain.

GLOSSARY

It may be helpful to the reader to understand from the start how the various key expressions are used in this report, as there appear to be a variety of uses of some of the terms.

The two key words are the nouns “benchmark” and “good practice”.

In the paper the noun **benchmark** is used to indicate a close to optimum standard or guideline which is of fairly universal application and which is well tested. The benchmarks in this survey may be a single standard or they may be flexed to allow for different circumstances, e.g. the level of capital investment in a lasting line. These benchmarks are not meant to be what is sometimes called “best in class”. In other circumstances – but not this report – the word benchmark can be used to refer to the median figures produced in a benchmarking study.

The expression *good practice* (or *good manufacturing practice* – GMP has been chosen advisedly rather than the other commonly used expression “best practice”. In this study a good practice is not intended to be quite so clear cut and definite as a benchmark. It is intended to be a guideline to high standards of operating for a large number of companies, but it may not be universally applicable.

Other expressions and concepts, which are of interest:

- The “*benchlearning*” is the highly targeted approach to performance improvement when a company tries to measure itself against other highly successful operators. Normally it requires an independent intermediary so it is not so appropriate for UNIDO’s constituency.
- The verb “*to benchmark*” refers to the practice of a company measuring itself against a group of reasonably comparable companies.
- The “*benchmarking club*” is a group of companies brought together on their own initiative or by an external organization to collect data and compare performance within the group and sometimes with outside comparators.
- The “*straw man*” is an artificially constructed target put together by logical thinking rather than necessarily any pre-existing example to provide an artificial target for performance improvement. It may be wholly accepted, accepted in part, or rejected.
- A “*greenfield study*” is similar to straw man but has a more factual base. «If we built a new shoe factory on a green field site to make 2,000 pairs/day of men’s dress shoes how would we organize it and how many people would we need?»

INTRODUCTION TO BENCHMARKING AND GOOD PRACTICE

Benchmarking, good practice and bench learning are all activities of a related kind, which are used to answer the following questions:

- “How do you know that your operation is efficient?”
 - “If it is not as efficient as it could be what can you do to make an improvement.”
 - “Knowing that your operation is not efficient and not doing something about it is not very helpful.”

The purpose of this study is to look at the way these techniques can be used to bring about improvements in the efficiency of shoe making and leather goods companies. The report will recommend an approach that is tailored to the needs of small and medium sized companies because the approaches to benchmarking used successfully by giant corporations are not suitable or realistic for smaller companies.

The paper will provide industry specific benchmarks and other tools for self-assessment of a company’s performance and it will also provide suggestions as to how improvements in performance can be made. But before we move into the more detailed assessment area it is worth spending some time thinking about the background to these widely used management tools.

General Description of the Techniques

The common point behind these three techniques of benchmarking, good [manufacturing] practice and benchlearning is the belief that learning by example is one of the most effective ways of improving a company’s performance, but it is important to note that slavish adherence to meeting shall we say the median level of performance in an industrial sector cannot be considered good practice. It is a good idea to use the benchmark as a basis, a “must achieve” standard but excellence comes from making a quantum leap ahead in performance from this point by approaching problems from a new direction or using experience from companies in other sectors.

There is also the important exercise of creating an artificial benchmark or a “straw man” as some writers call it from a detailed analysis of what actually “needs” to be done rather than what is actually being done today. Studying what could be achieved on a greenfield site with no history can also be useful.

Why do companies get involved in benchmarking and good practice etc? Here are some reasons:

1. A general desire to know how efficient the company really is. Not surprisingly it is generally better companies that have the courage and drive to do this.
2. The knowledge that a company is quite good in some respects but is fairly sure that it has areas of inefficiency.
3. A crisis. The company is losing money or only just breaking even and needs to look for areas where it can make improvements.
4. Obvious system failures, particularly where competitors are doing better. For example only replacing 60% of items sold by a retailer within one week where the competitor is managing to replace 90%.

We come now to the universe against which a company can benchmark itself.

- a) There are of course a lot of general surveys, which collect information from companies in a wide variety of service and manufacturing industries. These can provide information on a great many topics such as financial ratios, payment delays, purchasing structures, worker absenteeism etc. A typical example of this is the “Benchmark Index” in the UK. Access to this service is relatively low cost and simple.

The problem with general surveys is that although they may include a facility to break down by industrial sector they are general and for some areas of comparison are almost useless or so hedged about with qualification that they are difficult to use as an encourager of change within a company.

However there definitely are areas of business where the actual industrial sector makes no difference and the same rules apply whether you are making shoes or toys. An example of this would be the number of accounts receivable dealt with by one person in the accounts office in a year.

- b) A second more relevant possibility is where a trade or research (R&D) association, whether it be regional, national or supra national provides either one off or continuous benchmarking surveys to its members. An association of this kind should be able to assure the members that there will be complete confidentiality and anonymity in the survey. However no one can be forced to join in such a survey and generally it will be companies who should have most to worry about who do not join the group. Provided there is a good industry steering group to oversee the project these surveys should collect information that is useful to the membership.

A survey of this type becomes more valuable where it also gathers information from other countries or other industries and provides this as an additional benchmark for the members.

The cost of a survey of this type should be relatively modest and should allow most companies in the industry to participate.

- c) We now come to what a company can do on its own. The first thing a company should do if it has similar activities going in several places is to compare the key information in terms of cost and service between the different sites. It is surprising how hard it is to get managers in one section to adopt the obviously better methods used in another section. There is a great desire to “reinvent the wheel” and a “not invented here” attitude is a powerful block to progress.

If the company wants to benchmark itself against other companies it has first to carry out a detailed study of its operations and identify the key measures for efficiency and success. Only when it has done this can it decide against whom it wants to benchmark itself. It can also be said that it is looking for a partner to carry out a benchlearning exercise with. Identifying the right partner is critical.

- (ii) One can be looking for a company in the industry making similar products. In which case it will probably be difficult to arrange in one’s own country for competition reasons. It may be possible to find a similar company in another country.

- (iii) An alternative is to go for a non-competing company or companies in one’s own country and make allowances for the differing business conditions.

- (iv) The third option is the one often used by larger companies who want to learn how to carry out a particular activity well and are therefore looking for a company who are good at a special activity and it may be in any industry. An example of this was when the original low cost airline SOUTH WEST AIRLINES was looking at how to improve its aircraft turnaround times they decided to study how pit stops were organized in FORMULA ONE car racing.

It may be possible for a company to organize an individual approach on its own but very often it is necessary to employ the services of a facilitating consultant to make the bridges and ensure confidentiality where it is necessary. This is particularly the case where a company is trying to organize a private benchmarking club consisting of several comparable firms. This means that this approach is likely to be quite expensive and probably more costly and time consuming than many small-scale enterprises (SMEs) are able to afford.

We come now to the question of relevance. Many managers simply do not want to change and many companies do not want to change. This can be because they are smug and think they are good in all aspects (which they are usually not) or because they just don't want the bother of trying for example to reduce absenteeism from 16% to 6%.

To persuade these people/companies that they are not doing as well as other firms the comparative companies need to operate in closely similar fields so that there is no chance for the people to make excuses. This is why precise targeting of the benchmarking partners may be necessary. Of course with good companies and dynamic management this will not be necessary because only the slightest indication of an opening for improvement will start them thinking about how what another company is doing could be applied in their own circumstances.

However more general surveys can have a use beyond the areas where comparison is possible across all industrial and service sectors, they can indicate probable areas of weakness and a company can then dig more deeply into those areas.

As has already been said there are three measurement and managerial techniques involved in this general area.

1. **Benchmarking** is a technique, which allows a company to measure some aspects of its performance against those of other companies in the same or similar businesses. This can be quite precise, for example it is possible to say that wastage when cutting women's fashion shoe soles from sheet material should not be more than 17% or it can cover a range of standards, such as the following: output per worker hour on a lasting track should be 16-32 pairs/worker/hour depending on the level of investment in technology. Benchmarks of this kind need to have a clear indication of how the activity is defined, so in working out the percentages of a company's indirect workers it is necessary to know what the accepted definition of a direct worker is. We should be aware that benchmarks based on the experience of similar companies in the same industry could be so unchallenging as to be worthless. It may be that the whole industry is stuck with old-fashioned practices. Obviously international comparisons may show this up but another way is the artificial creation of a benchmark by careful analysis of what needs to be done for example to achieve 90% replenishment service. One way of arriving at the ideal number is to ask questions like this. If we were building a shoe factory on a green field how many people would we have in product development if we were making 5,000 pairs/day and 250 new styles/year. This kind of study can often produce what seems to be very challenging targets but equally it is surprising how often they prove to be achievable. In summary benchmarking should be based on relatively hard data.
2. *Good practice* could be defined as being almost the same as a benchmark. You could say that Best Practice in sole cutting ladies shoe soles was not to have wastage of more than 17% but for the purposes of this study we will use good practice as something more like soft data. One could say that best practice in product development was to have a computer-aided design (CAD)

system but that would not cover the question of whether the system was used effectively or was just a piece of expensive and idle furniture.

A common way of deciding how far a company follows good practices is to rate a function on a scale of one to five the various points on the scale being described by a narrative. To take our example of the CAD system. The score of 2 or 3 might be described in the following way: «Company has CAD system but it is only used as a glorified computerized pattern grading system.»

3. Benchlearning is the system described by a team from the Swedish KARLOV consultancy organization in their book entitled “Benchlearning, Good Examples as a Lever for Development”. It is really an implementation method for change that normally requires the use of facilitating consultants. The system described is a refined version of a number of the methods that have been used to bring about change once a company becomes aware that it has deficiencies that it needs to address.

There is a whole range of techniques, which can be used to implement change once a company has identified the need for change and a reasonably well-proven technique will be described in this report. However there should be no doubt that some changes, like reducing indirect numbers, can be extremely hard to implement.

Role of UNIDO

In this chapter we make an attempt to find and answer to the following question: «How can UNIDO best assist the adoption of benchmarking and similar techniques in the leather products industries in the countries which UNIDO serve?»

UNIDO needs to develop systems, which do not rely on expensive consultants establishing contacts with “best in class” (i.e. World-class) operators.

As far as external input is concerned it is quite likely that companies in the developing economies could reasonably expect to have access to national all classes of business surveys. As has been pointed out these do have some limitations. It is likely that national surveys will be able to access comparative data from say Western European economies through the good offices of UNIDO and similar organizations.

It is also reasonable to suppose that this report could provide the basic guidance for professional trade associations and research institutions to set up industry specific benchmarking groups or clubs in their industry. Once again it is reasonable to suppose that external comparative data can be accessed.

However, the key to this report and this project has to be the provision of some kind of self-assessment system based on benchmarks and good practice that allows a company to assess its position. It is vitally important that a company defines exactly where it is in relation to the various benchmarks at the start of the exercise otherwise everyone can think they have made extremely important changes in terms of quality and worker satisfaction when all they have done is to increase total costs by 25%.¹

¹ This is a true Western European shoe trade example.

Even if expensive consultants acting as facilitators are not a realistic option it can still be extremely helpful if a company can identify another company in another industry which has solved a specific problem. Then an individual approach can be made asking for a visit and discussion.

The other essential ingredient for a report of this kind is to provide a method of working to bring about a change. It would not be very helpful to provide companies with the tools for deciding whether their operation was efficient if one does not give any indication of what they should do when they had found out that they are inefficient at least in certain areas.

The structure and content of the following parts are as follows:

- The main body of the paper is a system of company self-assessment using a combination of benchmarking and good practice techniques
- The three *Annexes* are:
 - *Annex 1*: A relatively simple method to use in creating change to improve performance.
 - *Annex 2*: Some general advice on how bodies such as professional trade associations can organize industry specific benchmarking.
 - *Annex 2*: Some examples of manning and equipment levels.

There is a serious problem that has to be faced in using benchmarking in an industry like the shoe industry, which is that firms in the industry are very different from each other in terms of whether they make high fashion or basic shoes, whether they market independently or through a large group. This means that precise benchmarking across the industry is impossible. One research association divided its benchmarked companies into 11 different categories to achieve a more precise fit. To offer a multiple classification of this kind for worldwide use is clearly impossible.

For this reason in this benchmarking system no attempt is made to provide benchmarks for total capability, i.e. Number of people required to produce 1,000 pairs/day. Nor has an attempt been made to produce a series of benchmarks to cover all the various types of business. The benchmarks presented here are of the nature of “universal truths” which should indicate whether a company has a problem or not.

Best practices do not in general suffer from these problems.

The System of Self-assessment

There are many areas of activity where a company might want to assess itself. Naturally these vary in significance but it is important to state from the start that a company, which does well against the production benchmarks, can quite easily be virtually bankrupt because, for example, its marketing arrangements are absolutely hopeless. At the end of this section there will be a short list of what are considered to be the key performance that should be achieved if a company is to have a long-term future.

The areas we will be looking at are as follows:

1. Company size, location and management structure.
2. Company financial structure and financial ratios.
3. All aspects of marketing and sales.
4. Overhead structure.
5. Purchasing.
6. Design and product development.

7. Material utilizations.
8. Production:
 - a) cutting,
 - b) stitching (closing),
 - c) lasting and finishing (making),
 - d) component manufacturing.
9. Human resources management (HRM).
10. Quality control.
11. Information technology (IT).

Each of these sections will start with a short introduction to the topic which will then be followed by whatever **benchmarks** and good practices that are available. These key benchmarks are well proven figures resulting from studies in a least five (5) factories. In some cases there will be a list of *good practices*.

It should be noted that production issues do not dominate the topics covered. This is because in general companies devote all their efforts to improving production performance and neglect other activities that in many cases may be more important.

We come to the old proverb “You can lead a horse to water but you cannot make him drink”. There can be no improvement without a wish to do things better. All the benchmarking information in the world will not make any difference to the performance of a company unless management is prepared not only to analyze the information but act on it. There can be no place for those who say “we are different, these figures do not apply to us”.

In this report on the following pages **benchmarks are written in bold**, while *good [manufacturing] practices (GMP) are in italics*.

COMPANY SIZE, LOCATION AND MANAGEMENT STRUCTURE

Business Size, Structure and Location Management

Shoe companies can be extremely small in fact in many parts of the world artisan organizations with only one employee exist. Equally there have been a number of extremely large multi-site businesses employing over 30,000 people. There have also been some very large single site shoe operations although these have been more like multi-plant operations on a single site.

The last fifty years has seen the collapse of many very large companies and huge single site operations are extremely rare. In shoemaking there appears to be few of the economies of scale that occur in other industries. Companies with a history of high efficiency have historically used a series of specialized plants with few employing more than 1,000 people in total on a single site.

Given that there are few economies of scale in the shoe industry we will need also to study whether there are certain minimum sizes of operation from a viability point of view.

The huge shoe operations of the past tended to be located in multi storey buildings, certainly this was the type of building favored by the BATA organization but during the peak of European and American success in shoemaking after the Second World War this type of building was entirely replaced by rectangular single storey oblong box shaped buildings. Given the availability of land at reasonable prices this remains the ideal.

A very large number of shoe companies throughout the world operate in premises which are very inadequate and which do not allow efficient layouts. The cost of this sub-optimal space can easily add to 15% of the total employment bill.

On the whole shoe companies are best not located in areas where there is a mass of alternative employment particularly high tech employment. Regrettably the shoe and leather products industries are not glamorous industries and often have difficulty in competing for labour against more prestigious activities. It is also true that in many developed and indeed developing economies wages in the shoe industry are well down the scale of all other industry wages.

Low labour cost combined with a well-trained well-organized workforce is the ideal to strive for. However very low labour costs are not the only factor to be considered. Others are:

- Proximity to major markets allows a much wider choice of product and process and allows sales at significantly higher prices than a location that requires 4 months delivery time.
- A strong infrastructure is a tremendous help. Even though the tanning industry is very international and many shoe companies buy leather from tanners in a wide variety of countries it is an immense advantage to have a strong supply industry for materials, components and accessories close at hand. The same is true of such services as machine maintenance contractors, independent design and development services etc.
- Another key issue is whether the general government, economic and financial conditions are favorable to a shoemaking operation.

It is much more difficult to run a shoemaking business if some of the following conditions are present.

- The country's bureaucracy makes it very difficult to import without serious delay much needed raw materials. If your company is operating in the export business this can be catastrophic.
- Labour laws are very restrictive making it difficult to balance the workforce to the needs of the market.
- As will be said elsewhere if inflation is high and the cost of borrowing money is high.

GOOD PRACTICE:

- *There are few economies of a scale in shoemaking that cannot be achieved in a factory employing 600 people making between 5,000 and 8,000 pairs/day. Above this size complications of management structure outweigh the advantage of any production gains from the use of sophisticated equipment.*
- *Assuming that a company is using mechanized as opposed to hand shoe making methods the minimum economic size of a shoe factory is that needed to operate a single lasting unit. This can vary from around 450 pairs/day for a Good Year welted line to 1,000 pairs/day for a firm making basic cemented shoes.*
- *In general companies able to justify more than one of each key machine are at an advantage because of their ability to manage machine breakdowns more successfully.*
- *In certain types of production where companies are operating in well defined world market segments in competition with strong producers from other countries it is necessary to operate on a world scale or something close to it. For example in the international casual footwear market it is not much use making 1,500 pairs/day if the standard ECCO plant makes 6,000 pairs/day.*
- *If the market is a national one then the aim should be to be one of the three largest producers.*
- *Unsuitable premises produce very substantial extra costs, which are both open and hidden. It is always worth doing a study to find out how much it would cost to move into better more suitable premises and how much cost would be saved. The answers are often surprising and many shoe companies have sites that can be sold for other uses, which further reduces the cost of the move.*
- *In addition, carrying out the exercise can often indicate ways in which efficiency can be improved without actually making the move.*
- *A location reasonably close (say 3 days by truck) to major wealthy markets which at the same time has low labour costs offers tremendous opportunities in selling rapid initial order and repeat delivery services. These opportunities need to be exploited and in these circumstances it would be very foolish just to try and sell on price alone.*
- *Do not attempt to build up a substantial export business, which will require the use of a considerable quantity of imported supplies without ensuring that you have a logistical system in place that cannot be blocked up regularly by delays, bureaucracy and corruption in the customs and other administrations. If you do you will ruin your reputation as a reliable partner and you will not help the reputation of your country's industry either.*
- *Underused buildings and machinery cause wasteful use of assets. If you cannot reach the minimum scale to occupy a lasting line you should stick to manual methods.*
- *Ideally the ability to operate two lines produces a much more viable position.*

Management

Having chosen what kind of business we would like to have the next point is to decide on an appropriate management structure.

Many shoe companies are small and many are managed by their owners therefore in many cases the modern formal management structures used by large companies are not appropriate. In spite of this a large number of shoe companies have inappropriate management structures, which lead to them being very badly managed. But let us look first at the main functions that have to be covered in a small to medium size company. These are:

- finance,
- administration,
- purchasing,
- production,
- marketing and sales.

When we move up to the next stage we may also add human resources and production may be split into pre-production and actual production and marketing and sales are likely to be split. The following points should be considered:

1. In a small to medium size business it is not usually economical for the owner/manager to have no direct function himself/herself and have say four people reporting to him/her. The manager should decide quite objectively what skills he or she possesses and then take responsibility for that, normally either sales/marketing or production and appoint someone else to carry out the other main functions. In most cases there is likely to be a specialist who handles finance. It is possible for an owner/manager to take charge of finance and administration and for highly suitably qualified people to look after sales/marketing and production but this is generally a second best alternative.
2. Purchasing is a key function and as will be shown later poor purchasing practice can result in raw material prices being up to 25% higher than they should be. It is also an area where corruption is quite common. It is not surprising therefore that in many smaller to medium companies the owner/manager takes direct responsibility for purchasing. Even for larger organizations modern purchasing practice recommends a split between specification and price negotiation for materials and the day to day requisitioning of supplies from suppliers.
3. Some companies have found it useful to group what are called the “pre-production” functions together under one person and make them responsible for getting the shoes into production. This includes product development (but not design), purchasing and production control.
4. Marketing and Sales are absolutely key functions. It is quite normal for the design department to report to marketing. It is true to say that the ability of the sales and marketing team to open doors in profitable markets is the key to business success and survival. This is the case even if the company is basically a manufacturing only contractor. There is still great skill in choosing the main customer.

Management Skills

Traditionally small to medium sized shoe companies have not had highly trained or highly qualified management although there have been some exceptions. Large companies will have had the opportunity to train their own staff or attract external recruits.

Unfortunately the fact that a large number of small to medium sized companies are run by first or second generation self taught shoe makers means that there is often a lack of skill and a lack of awareness of quite a number of the management functions. There is often a lack of understanding of modern management tools and techniques and a lack of vision.

Remember, it is only actual shoe design and shoemaking skills, which are specific to the shoe industry. All of the other functions in a shoe business can be performed satisfactorily by someone from outside the industry.

Lack of suitably qualified management and personnel is one of the key problems facing most shoe businesses. The problem is that most businesses are not big enough to run their own training schemes for both management and worker. As a result of the decline in manufacturing activity by large shoe making groups there is no longer a pool of trained people from which to recruit.

GOOD PRACTICE:

- *Shoe companies need to avoid becoming inbred by purely employing people from the shoe industry. Sales, marketing, purchasing, finance administration, human resource people from outside the industry can provide increased professionalism and a wider vision.*
- *Training of both management and workers in the shoe industry has to be a co-operative activity. Companies have to work together to encourage the setting up of training organizations and ensure their continuing support.*

COMPANY FINANCING

Capital Structure

The world shoe industry is dominated by a mass of small companies. There are relatively few shoe companies, which are quoted on any stock exchange and many companies are owned by one individual or one family. Even in countries with well-developed banking systems the shoe industry does not have a high financial reputation so that borrowing from banks is often difficult and expensive. This is particularly the case for smaller companies; larger longer established companies with substantial property assets find it easier.

GOOD PRACTICE:

- *Public stock market quotations for shoe companies are rare and due to the volatility of stock markets and the arbitrary judgments made by financial analysts shoe companies should think very carefully before seeking a public quotation.*
- *For medium to large organizations private company status with substantial bank participation (at a reasonable cost) is the normal arrangement.*
- *For smaller companies it is highly desirable that a high proportion of the company's capital needs should be represented by shareholders funds. Ideally Bank finance should only be sought for highly profitable growth opportunities. The reason is that in many countries interest rates are so high that it is impossible to make sufficient profit to cover the cost of borrowing. Financing the continuing business in this way only leads to decline and eventual bankruptcy.*
- *All companies and especially smaller companies should understand the alternatives to normal local bank finance that may be available on substantially more attractive terms. These include:*
 - *Machinery suppliers: finance for new capital investment.*
 - *Export finance that can be packaged with credit insurance and bought outside the purchaser's country.*
 - *Government and international development loans. But remember: only take loans for what you want to do anyway. Never take loans just because they are available.*

Finance and Accounting

Obviously failure to make money in the end results in the collapse of a company although it is certainly possible in some countries for a business to continue for a remarkably long time without making the profits that should be considered necessary for the maintenance of a healthy business. This can happen for a number of reasons:

- a) state or semi state ownership;
- b) actual or hidden subsidies;
- c) low profit expectations of owners (who do not seek a proper return for their capital);
- d) gradual erosion of actual and hidden reserves.

Assuming that this is not the case then the actual financial requirements of a business are heavily dependant on the national financial circumstances in which companies operate. For example is there habitually high inflation of 15% plus and is the cost of borrowing money very high say also 15% plus?

World wide the shoe industry does not find it easy to borrow money and if it can borrow then the cost of borrowing is very high. In some situations of high borrowing costs and high inflation it is difficult to see how shoe companies can survive and the only reason that companies continue in business is because the owners conclude:

- There is no other business that they understand.
- There is no one who wants to buy their businesses.
- If they could get their money out the problems in similar businesses are just as bad.

So we shall see that it is rather hard to establish universal benchmarks for different levels of inflation or borrowing costs, but there are some general principles.

Where benchmarks can be established without reference to external financial conditions is in the amount of capital needed to run a business, particularly working capital, though some can also be applied to fixed capital use. In general this is an area which is very often neglected by management even in otherwise very well run companies, but it is of immense importance.

Many companies, which have problems in borrowing money could solve their problems immediately by reducing their working capital to benchmark levels.

BENCHMARKS:

- A shoe manufacturing company should turn its capital at least 2.5 times/year.**
- A shoe retailing company should turn its capital at least 2.5 times/year and 3.5 times/year is usually achieved by better companies.**

Capital turn is annual turnover divided by total assets and good capital turn is the result of the efficient use of capital that will be discussed later.

Capital turn multiplied by the profit on sales percentage gives a return on assets. For example if a company turns its assets 2.5 times/year and makes 6% on sales its return on assets is 15% ($6\% \times 2.5 = 15\%$).

What return on sales should a company make? This question can be tackled from two directions:

- The amount the company should make according to what kind of business it is in.
- The amount it *needs* to make according to the cost of borrowing money etc.

BENCHMARKS:

- If we look first at the variation by businesses, profit percentages need to be higher in businesses that employ more assets (i.e. branded and high fashion businesses). Until the mid 1990s target percentages for return on sales for normal Western European companies could be set at:
 - Basic Shoemaking 6- 8%
 - Powerful Brands 8-12%
 - Specialized niche products (i.e. safety) 12-16%
- Profitability in protected economies where there is relatively high inflation can often reach and exceed 15%.
- Making below 5% as a normal return is risky business, it only needs a small problem to turn the profit into loss.

How much money does a company need to make?

- It should make enough to cover the cost of capital. If a company uses $\frac{2}{3}$ of its own capital and $\frac{1}{3}$ borrowed money and the shareholders want a dividend of 8% and the banks have an interest rate of 12% the average cost of capital is 9.33%.
- If inflation is relatively high a company needs to make sure it makes enough profit to finance the increase in capital required each year to keep the business going at the same level of activity. If a company has assets of € 2,000,000 and inflation is 15% it needs profits of € 300,000 just to finance the existing business.

Using this example produces a company, which needs to make a return on capital of over 29% and a return on sales of 11.7% to provide the required return to its investors and bankers and cover the cost of inflation. Any money required for expansion is on top of this.

This example shows why it is very hard for shoe companies to survive and prosper in countries with high inflation. It also shows why many successful companies in those countries do not borrow from the bank because if it is their own money they can control the amount of profit they want to take out of the business as dividends.

Working Capital

BENCHMARKS:

A shoe company should not have more than

- 30 working days of raw material,
- 4-10 working days of work in process,
- 10 working days of finished goods if it is a direct supplier to retailers,
- 60 days of finished goods if it operates a wholesale system.

The advantage of working days as a measure is that it adjusts itself for changes in the price of products.

As far as work in process is concerned, companies can operate down to half a day but for conventional shoemaking 5 is quite enough and even for Good Year welted no more than 10 days are necessary.

For a company delivering more or less directly from the end of the factory finished goods stocks of more than 10 days are usually an indication that the company is carrying too much old, discontinued, redundant or reject stock.

Fixed Assets

GOOD PRACTICE:

- *Efficient use of fixed assets is important because if capacity utilization is only 70% then it is almost certain that the company is having to make a return on capital that is tied up in the business but which it is not using.*
- *It is never realistic to use shoemaking assets at 100% of the time unless of course the plant is worked persistently on overtime above standard hours.*
- *If production needs to be increased make a proper investment decision. Do not just add more women with scissors behind each sewing machine.*

The shoe trade is generally seasonal (except for products like military boots) and most factories change their collection twice a year. The effect of this is generally more severe in women's factories than in men's and children's factories.

BENCHMARKS:

- **Good capacity utilization for a men's and children's factory would be around 92% of annual capacity.**
- **For a women's factory a good result would be 87%.**
- **A smooth production level throughout the year is one of the best ways of ensuring high profitability.**

Important reasons for under-use of capacity include:

- High absenteeism among the workers. If absenteeism is around 15% it is very hard to get optimum capacity utilization.
- Decline in business leading to under-use of capacity. The world has too many shoes and too many shoemakers. This means there are many factories, which were set up with a much larger capacity than they can use today. Shoemakers often find it difficult to admit that they need to reduce capacity and sometimes this is very difficult when they only have one lasting line.

However:

- The standards set out above are not correct in all circumstances. A few companies exist working in very specialized activities that have decided that by giving a quite exceptional service to their customers they can make extremely good returns on both sales and assets. In order to provide this service they are prepared to reduce capacity utilization down to around 50% (having capacity ready to meet demand, being prepared to create specialized lines at short notice).
- These capacity utilization figures can only be reached when the company has its markets under its own control.

Marketing and Sales

Competitiveness

However good a company is at producing something if it does not have a sound marketing and selling policy it is unlikely to be a success.

There are far too many unwanted shoes in the world and far too many shoemakers for the available demand. In many countries only about 10% of manufacturers have any kind of marketing and sales strategy and therefore have a chance of long-term survival. Even if you have extremely low costs (like Chinese companies) this does not necessarily ensure that you will make enough profit to maintain your business. If you have no marketing strategy you have to rely on a wholesaler or trader and that is the person who makes the profit, not you.

There can be no single recipe for success for every shoemaker in every market. In some cases it is completely unrealistic to think of exporting, in other cases having a low export percentage is a sure sign of failure.

GOOD PRACTICE:

It has been said that to succeed you need to be

- *either the lowest cost producer in the world,*
- *or provide the best service,*
- *or provide the newest products.*

This may not be true of the typical shoemaker but there is a lot to be learnt from the statement and it is **certainly** true for a company providing components to the shoe trade.

Product Originality

GOOD PRACTICE:

→ *Not every company can afford its own design staff but there is no doubt that companies that produce their own designs achieve higher prices than those who are asked by their customers to copy someone else's designs.*

Equally the ability to produce products, which are technically difficult to make can lead to higher prices. It does not matter whether this is technology based, i.e. waterproof shoes or skill based i.e. woven leather shoes.

Product Profitability

GOOD PRACTICE:

- *It is good practice for a company to know exactly where it is making money and where it is losing money. In many companies there is a huge variety of profitability depending on:*
- *types of shoe,*
 - *customers,*
 - *types of customers,*
 - *markets,*
 - *distribution channels, i.e. direct or wholesale.*

BENCHMARKS:

- **Some countries in Europe have price levels 15% above others.**
- **Some types of customer (i.e. mail order) pay significantly more than others (for service).**
- **Retailers can be prepared to pay 10% more for all orders to a company that can supply repeat orders quickly.**
- **Wholesalers need a 30% margin, agents require a 7% commission.**

Services

Service is one of the surest ways to achieve better prices and usually this can be provided at low or nil extra cost because running a business efficiently usually reduces costs.

Service is not just a question of delivering shoes on time and of the correct quality, it is also concerned with the ability to work on short lead times to provide repeat orders, and with the flexibility to meet sudden changes in demand.

Brands

The ownership of a brand can be a very great benefit and most shoemakers in the world are envious of the companies that own big brands. But the truth is that many of the big brands do not make anything like the profits that they ought to because their logistical systems are not good enough to manage the very demanding supply chain requirement of a major brand.

GOOD PRACTICE:

- *A brand is worth more when it is*
- *long established and is not just a youth brand that exists for 3-5 years and is then overtaken by the next bright idea.*
 - *based on a whole range of products and not just a single idea.*
 - *based on long term attributes such as fit/comfort or durability.*
- *Remember: a brand cannot be created by advertising, a good product has to exist first. This is a very common mistake!*

BENCHMARK:

→ To maintain brand awareness of an established brand in the shoe trade requires an expenditure on advertising of 3.5-4% of turnover.

Reputation

Even if a company does not have a brand it may well find it worthwhile to establish a “good reputation”. Increasingly major Western buyers are concerned that they should be seen by their customers to be buying from reputable suppliers. So a reputation not only for quality and reliability but also for good health, safety, environmental and labour policies can be a valuable asset in attracting important and strong buyers.

Bad Practice

- Selling shoes at 70% of full cost as price entry products when the sales lead to no more profitable sales in other products.
- Having a spread of contribution so wide that on the best products contribution is 3 times that of the worst.

Overhead Structure

Many shoe companies spend a lot of time and effort in taking the last minute of unnecessary work out of production costs but forget just how many people are employed in overhead or indirect activities. This is often particularly the case in lower labour cost countries. In some cases the actual cost of the minute of work (to be sold to a customer) in a low labour cost country can amount to six (6) times the actual cost paid to a normal worker. Obviously this completely destroys any competitive advantage gained from the original lower labour cost.

Traditional management and overhead structures used in the shoe industry up till the 1970s are totally inappropriate and far too expensive for today's needs. If a company has not drastically restructured its overhead organization it is likely to face a heavy cost penalty. It is also true that modern overhead structures are much more effective in delivering what is needed than old structures.

In spite of this many otherwise modern companies continue to have old fashioned and expensive indirect structures. One reason is that change in this area is very difficult to make and one reason for this is that it is extremely difficult to say (for example) precisely how many mechanics are needed for a factory making 2,000 pairs of shoes a day.

There is a widely accepted definition of what is a direct worker and what is an indirect worker. A direct worker is someone who adds value to the shoe and an indirect worker is one who does not. So in addition to the obvious indirect workers such as secretaries, accountants, mechanics, canteen workers etc, the following are also indirect, supervisors, conveyor loaders and quality controllers. The definition is quite clear and should be easy enough to use.

BENCHMARK:

→ For a normal shoe factory supplying shoes directly to major customers the percentage of indirect workers as a percentage of total workers should not exceed 15%.

If a company operates a branded wholesale business then the people involved in this, sales staff, warehouse workers, advertising staff, may be excluded from the 15%. Although a number of the best-known brands do better than this (i.e. 12-13% in total).

There are well-established benchmarks for the design and development function that will be covered in the section on this topic.

Otherwise it has proved difficult to provide reliable guidelines. One of the reasons for this is that indirect numbers in quite a large proportion of overhead functions are *not* controlled by the size of the factory and the pairs made but by the number of styles in production and the number of new models introduced each year because it takes no more time to

- purchase 1,000 m² of a material than it takes to order 100 m²;
- plan 5,000 pairs/day on 50 styles than it does to plan 500 pairs/day on 50 styles.

So it is important to understand what controls the number of indirect workers function. The principal indirect people employing activities are

- supervision and supply of work to operators,
- product development (see a chapter later),
- administration.

Supervision

The issue of supervision is complicated by the extent to which companies employ working supervisors or alternatively where the work of supervisors is assisted by conveyor line loaders, quality inspectors etc.

BENCHMARK:

→ For pure supervision a good benchmark is 25 workers for one supervisor and where other supporting staff are available 40 workers for one

Administration

BEST PRACTICE:

→ Companies with well controlled and highly productive administration functions almost always have large open plan offices where various functions are grouped together so that for example the sales office is next to the purchasing office which is next to the production planning department etc. This has several benefits:

- It eliminates many of the half jobs that exist on the edge of each department.
- It makes communication much easier.
- It hugely improves efficiency.

BENCHMARK:

→ The introduction of open plan offices in a shoe company is likely to produce a reduction in the number of people employed of about one third over a 2-3 year period.

Bad Practices

- Companies with badly organized and controlled administration structures often have indirect percentages of total employment of 30% instead of 15%.
- Each administrative department has its own office with high walls around it.

Annex 3 contains various examples of factory manning levels that are based on a large amount of benchmarking material.

Purchasing

In smaller shoe companies the owner or manager has traditionally controlled the purchasing functions themselves; this was probably for a number of reasons:

- The key importance of buying at the right price in ensuring the overall profitability of the business.
- The ability of the owner to commit the company to orders without reference to a superior.
- The risk of corruption of professional buyers by suppliers.

In many medium to larger companies purchasing managers/directors have been employed and generally where the size of business has justified it specialized buyers for different groups of materials have been employed, i.e. for upper materials, bottom materials etc.

The purchasing function includes selections of materials, negotiation of contracts and prices and day-to-day procurement to meet production schedules.

There is strong evidence that in many shoe companies the purchasing function has been performed very poorly and a lot worse than in other industries that have adopted a more professional approach.

The result of this is that many companies in many countries are paying at least 25% too much for their materials. This means that the company is wasting around 12.5% profit opportunity, margin that could be used either to improve profits or reduce prices to make the company more competitive.

BENCHMARKS:

- **A company making normal women's cement shoes in a country with medium wage levels should have a material content of around 50% in value in its products. Sandals will require about 44% and boots about 60%. Casuals may justify a slightly higher percentage and a company operating in a low labour cost country can expect higher material percentage (because labour will be a lower percentage of total cost). Typically this might increase these percentages by 15%.**
- **Normally a company should only have a raw material stock equivalent to 6 working weeks requirements. Companies making small volumes of high fashion products may have more but this leads to higher end of season markdowns.**
- **The cost of markdowns at the end of each season should not exceed 2% of total material purchases.**

GOOD PRACTICE:

- *In a medium sized organization the purchasing function should be split. Material Selection and Negotiation is one job, day to day ordering and progressing is another totally different function and is really part of production planning.*
- *Negotiate properly with your supplier. All purchasing is a compromise between achieving the lowest possible immediate price and having a reliable long term supply chain.*
- *Whenever possible do not become dependent on one country for your supplies. It is vital to know what is available on the world market.*
- *A poor payment record carries a heavy price penalty. It can quite normally result in a 12% price premium.*
- *Choose suppliers of an appropriate size. If you can place medium size orders go to a medium scale supplier. A small supplier will cost more than is necessary; a large supplier will regard your business as insignificant particularly when dealing with smaller end of season orders.*
- *Be realistic about quality, it is important to understand that certain raw hides and skins cannot produce wonderful leather.*
- *The skill of the Italians is said to be that they produce excellent shoes out of ordinary material. Decide whether you want to follow this model or adopt the alternative of buying expensive raw material and minimizing work content.*
- *Ideally have a proper leather assessment system, which allows proper evaluation of incoming supplies.*
- *Always measure incoming supplies to check the accuracy of suppliers' measurements.*
- *Inspecting leather in tanneries before delivery is expensive and does not ensure good quality. In the end the inspectors tend to be "captured" by the supplier.*

Design and Product Development

A company which has a high quality design and development section is immediately in a much stronger position than one which depends on customers to provide it with design ideas and which has a slow and inaccurate product development section. An ability to create its own designs allows a firm to choose its customers and gives it much better control over its selling prices. Having a good design and development section is also a sure sign of technical competence.

Good product development almost always leads to efficient production and good quality. A factory that spends its time putting right the mistakes made in product development cannot produce at high speed and designed-in quality problems can never be wholly eliminated in the factory.

It is also true that highly skilled designers work extremely fast compared with less skilled ones and good product engineers also have a sureness of touch which allows them to produce well engineered models very quickly.

However having a good designer (or even a designer at all) costs a considerable amount of money and this is something that many smaller companies simply cannot afford. It is not only the salary cost of a designer it is the add-on costs for travel and design information which are necessary.

However there can be no excuse for bad and slow product engineering. It is a function which most companies need to have and there is no point in it being done slowly and badly so that the company delivers products late and to poor quality standards.

Today CAD systems for shoe engineering are freely available and at prices, which are only a fraction of those, that were paid when such systems first came into use 25 years ago. There is a wide choice of systems and on the whole the more expensive ones (which are still quite cheap) do rather better than some basic systems. Unfortunately many companies fail to exploit the benefits available from use of such systems and in these companies the CAD function is little more than a computerized grading system. In sophisticated companies there is almost total linkage between the company's CAD system, its last makers, its costing system, tool making and control data for computer-controlled machinery.

In some countries CAD bureau have been established either as organizations attached to industry associations or as an addition to a Knife and Die makers business. For many small companies using one of these bureau is a much better alternative to having no access to CAD or a very low grade in house CAD operation.

The quality of a design and development department can be assessed from three angles:

- productivity,
- punctuality and speed of development,
- accuracy of work (i.e. patterns put together properly first time).

Many development sections are highly unproductive and it is not unusual to see productivity of only a quarter of what it should be.

BENCHMARKS:

- Using the most modern CAD equipment one produce development engineer should be able to produce one model from designer sketch to graded patterns per working day.
- This means that around 100 models can be produced per season since it is not possible to have 100% utilization of the product development.
- Using conventional technology (no CAD) one pattern development engineer requires five days to develop a pattern from design idea to graded patterns.
- The figures given above are calculated on the basis that the total number of new designs produced to a graded pattern stage per year is divided by the number of genuine product engineering staff in the product engineering department.
- A company should aim to develop a new model from first design idea to entry into bulk production in 60 working days (12 weeks).

Material Utilization

Raw materials should normally account for about 50-55% of the sales value of a pair of shoes. In a country with very low labour costs it may be more since raw material prices tend to be fixed in a world market. It is very important to make sure therefore that raw materials are used economically, it is also important to know whether what seems to be a cheap leather (because the price is lower) is in fact cheap or whether in reality it is more expensive because the amount of waste is more than the apparent cost saving.

BENCHMARKS:

- Any company which is not using a relatively modern system for measuring patterns, creating leather allowances and controlling cutter performance will almost certainly be wasting at least 6% of its material and may be wasting as much as 16%.
- The installation of a leather-measuring machine to control the tanner's measuring system is likely to produce savings of 2% on the leather bill.

It is not difficult to measure the absolute area of a shoe pattern and the degree to which the patterns interlock. There are reliable hand methods for doing this and most modern CAD systems have a facility for doing this. However the key to improving leather utilization lies in establishing how cuttable a given type of leather is and then training cutters to cut in the most economical way.

GOOD PRACTICE:

- *The actual percentage of cuttable leather in a given type of leather is very variable, for example a buffalo calfskin may be only 75% cuttable, whereas a corrected grain side leather may be 92% cuttable.*
- *Adjustments have to be made also for the size of pieces in a given model. Clearly cutting large patterns out of small skins produces more waste than cutting smaller pieces.*
- *It is unusual to find companies where the average standard of cutting in terms of economical use of leather is as good as it should be. So any cutting system is likely to include retraining of cutters.*
- *It is usual for cutters to be paid an incentive for cutting economically as well as quickly and cutters incentives should normally put more incentive on saving material than on cutting very fast.*
- *Complete packaged systems for controlling the quality of incoming leather and controlling the use of leather are available. One of the most widely used is SATRASUMM that is sold by SATRA of the UK. The level of saving from installing a central system is so high that the cost of a system will often be paid for in six months out of the material savings made.*

Using Synthetic and Artificial Materials Economically

Man-made (synthetic or artificial) materials do not normally suffer from the same problems of variable quality that cause difficulties with leather. Even so the use of these materials should be controlled. Costed material allowances for each style should be established and the issue of material to cutters should be controlled.

Because these materials are consistent and come in standard size sheets or rolls it is possible (even when not using a computer controlled cutting machine) to establish optimum cutting patterns by computer, print these on to a piece of paper and then instruct the cutter to work to a predetermined plan. As an example cutters working on their own cutting women's Louis heel soles out of resin rubber sheets will typically waste around 23-24% of the material. A cutting optimization system is likely to reduce this to 17%.

Production

This is the largest section of this survey and it is probably still the most important area where companies can improve their performance. It is also an area where there are quite a lot of benchmarks or “benchmarking systems”. Precise comparisons are difficult in many cases because a great deal depends on the type of shoes being made. This is made worse by the fact that many companies and their workers for example cannot conceive of a seat lasting machine seat lasting more than 1,000 pairs/8 hour shift where some companies achieve 3,000 pairs/8 hours.

Cutting

The most important rules for cutting are dealt with in the section concerning material utilization since as far as leather cutting is concerned it is almost certainly more important to cut economically than cut fast. Almost all cutting speed benchmarks are therefore rather irrelevant particularly as the number of pieces in each shoe is rather variable.

In leather cutting the standard swing beam press is the general rate but a number of “environmental and ergonomic” good practices can improve overall performance levels.

GOOD PRACTICE:

- *Good lighting is crucial. 1,500 lux is the correct level and it should be “cool” lighting.*
- *Knife storage should be properly organized so that cutters do not waste time collecting knives.*
- *Good knife storage prevents damage to knives that avoid the need for “double bump” cutting that slows cutting and damages the cutting board.*
- *The removal of cut pieces should be efficiently organized.*
- *Scrap leather should be collected in bins/bags and not thrown on the floor. This allows inspection to see whether the cutting is close enough.*
- *Presses which have beams, which swing into place automatically reduce fatigue.*

In the past it was thought that the minimum volume to justify the cost of press knives (rather than hand cutting) was around 3,000 pairs per knife-set. Today many companies would expect to make knives for orders smaller than that.

The cutting of samples and small orders are being revolutionized by the introduction of computer controlled continuous cutting machines. Initially these were mainly water jets and very expensive but more recently oscillating knife systems have become popular at a lower capital cost so that today good practice would be for even a smaller company to use this type of equipment and in fact the cost justification is often better for small companies. All these systems involve an operator actually making the cutting plan.

GOOD PRACTICE:

→ All shoe companies with reasonable financial resources should consider the installation of a computer controlled continuous cutting system. The benefits can be particularly great for companies with a very varied production and a good CAD system. Such systems:

- Allow a much quicker start of cutting of full ranges of sizes.
- Reduce tooling costs on models selling small quantities.
- Encourage the use of optimum patterns. Unsuitable initial patterns and material differences can be dealt with at low cost. The latter can save leather.

Remark: Labour savings are not likely when compared with press cutting but are likely compared with hand cutting.

Cutting of Synthetic Materials**GOOD PRACTICE:**

→ Use a cutting machine specifically designed for cutting these materials, such as a wide beam traveling head press, which allows through feeding of material. **Do not** use a conventional leather press where rolls of material have to be pre-cut inefficiently and wastefully to allow the material to be brought under the cutting head.

→ Use gantries holding a number of rolls of material to allow efficient feed to the cutter. Self-leveling platforms can be used to feed sheet material efficiently to the cutting deck.

→ Control of material use is essential but use of CAD system to produce optimum cutting layout plans can be useful.

BENCHMARK:

→ If sole and insole material wastage is above 17% studies should be done to bring about an improvement (wastage is most easily calculated by weighing the material before and after cutting).

Normally multi-thickness cutting should be the rule provided pattern distortion does not occur. But for smaller quantities of parts from a given material it may be more economical to cut single thickness, this avoids waste in the preparation of much larger packs of material.

Stitching (closing)

In spite of the introduction of computer controlled stitching for some stitching jobs the stitching department remains the most labour and skill intensive part of most shoe factories. Stitching department productivity depends on three main factors:

- (ii) The skill and dexterity of the workers
- (iii) The level of activity achieved. Are the workers kept occupied for a high proportion of the time?
- (iv) How up to date the machinery is.

Achieving high efficiency in stitching is much more difficult than in any other part of the factory. This is due mainly to the high degree of sophistication required in management and training to achieve the best results but it is also due to the fact that shoes vary enormously in what stitching needs to be done and by what machines. This sometimes makes it hard to justify the use of sophisticated work measurement techniques on styles where production runs are short.

In addition because shoes are so variable and the work content of different operations varies from shoe to shoe the balancing of stitching departments is a key issue and requires considerable skill to achieve best results.

BENCHMARK:

→ **Even assuming a company has up to date machines and it is reasonably organized it is likely that overall performance can be improved in the range 30-70% by introducing better training, better work measurement and more sophisticated control of employee activity.**

Measuring Employee Performance

This is an extremely difficult area and probably presents the greatest difficulty for a company wishing to assess its overall performance. An experienced observer can look at the way an operator is working and make some assessment of performance. However there are other variables that are hard to measure:

- It is difficult to judge precisely whether the worker is making unnecessary hand movements.
- Whether the shoe upper has been constructed in an efficient way by production engineering department.

However to establish the precise situation it is really necessary to carry out some precise measurement. This usually involves the employment of an organization that has a database against which the company's actual minutes per pair can be compared.

All that is really required is to be able to look at an established upper pattern and calculate what the company believes is the number of minutes it would require to put this upper together. If the example upper has already been measured by an organization with a data bank then it will be possible to make a comparison to see what the scope is for improvement. It is intended that a variety of "pre-costed" styles will be made available for self-assessment. If a company finds it has a very big difference between the example costing and its own costing it has the chance to put in a new measurement system of the SATRA DATA SHOE DAT or CTC's CORIVAL type.² All of these require quite a lot of work and some expense but in the end result in:

- A much more accurate definition of the job that actually needs to be done.
- A film record of how the job is done.
- Can lead to very considerable savings.
- The possibility of improved earnings for the workers.
- A much more just payment system. In many stitching departments the stitchers with more skill are paid much less than those with less skill.

Measuring Closing Room Activity

We are talking here about the number of people in a stitching department who are not doing any production at a particular time. They may be:

- Standing up or walking around the department.

²CENTRE TECHNIQUE CUIR CHAUSSURE MAROQUINERIE, Lyon, France.

- Sitting down doing nothing.
- Talking to their friends.
- Looking for badly presented and supplied work.

BENCHMARK:

→ **In a closing room if more than 10% are not working then there is a problem that needs to be dealt with.**

These problems can be caused by

- Poor discipline by supervisors. For example allowing working to leave their positions 10 minutes before the end of work.
- Simply not enough work for the total number of workers.
- Most commonly a mix of production, which requires a balance of operations that is not suited to the available people and machines. This problem can be reduced or avoided by better planning of work so that the proposed production plan is checked to see that it does not demand more capacity on any operation than exists. If it does then steps need to be taken to increase capacity. This problem is much less when a large number of the workers are capable of doing a number of different jobs. Multi-skill training should be on jobs requiring different motor skills. In addition to improving flexibility this reduces the risk of RSI (repetitive stress injury).

Measuring Quality of Machinery

Normally about 70% of the people in a stitching department work on machines. The rest of the people do hand work perhaps with the assistance of hand held tools, such as a cement spray. For these people considerable productivity improvement can be made by improving the layout of the working bench, providing proper drying racks for uppers, providing proper tape dispensers etc.

So stitching and similar machines (folding, binding, skiving) are used by around 70% of the workers.

Improvements to stitching machinery over the last 30 years have taken two forms:

- Use of computer controlled stitchers that are only usable on certain types of product.
- Improvement of existing mainly edge following machinery such as post- and flat-bed stitching machines skivers folders etc. by the addition of
 - quick stop and variable speed motors,
 - needle stop and needle positioning devices,
 - threads cutters,
 - programming facility.

BENCHMARK:

→ **The introduction of modern machinery of this type generally improves machine productivity by 30%.**

The Use of Computer Controlled Sewing Machines

These machines are of two types:

- Small machines, which generally are not capable of stitching over a wide area. These machines are used for such operations as attaching elastic gussets or stitching the ends of bars to vamps. The machines cost little more than a post sewing machine and are useful in almost all shoe factories. Even where wage costs are low they are often worth installing because they perform small close stitching operations more tidily and

consistently than can be done on a conventional machine. They can work well in factories with small series because they carry out operations common to many styles.

BENCHMARK:

→ **There are very few factories that cannot justify the use of small computer stitches.**

- Large area machines which are capable of working on the whole of a shoe upper and carrying out decorative and constructional stitching. These machines often require highly complicated pallets in which the parts of the upper are held so that the stitching operation can be carried out.

The drawbacks of these machines are:

- They will not work on curved surfaces.
- They require extensive tooling that means they are less suitable for shorter runs.
- They are generally of little use in a women's fashion factory.

However given the right conditions, men's and children's shoes of all types and women's casuals and sandals can be very useful and for some production (e.g. cowboy boots) they are indispensable. Serious users of larger computer stitching machines are prepared to heavily re-engineer their products to allow maximum use of these machines.

Lasting and Finishing (Making)

Over the years many shoe companies have made their principle investments in lasting machinery. In fact companies have often invested in new equipment for the lasting department when the return on the investment was completely inadequate. In many cases better results could have been achieved simply by organizing the existing equipment better.

The lasting department contains much of the most expensive machinery in a shoe factory, not only the actual lasting machines but machines such as automatic cementers and roughers.

One problem faced by many shoe companies is that different types of shoe, court shoes, sandals, open back shoes etc. all require very different machine and operation sequences and some shoes, such as sandals do not require any lasting machines because the lasting of most sandals can only be done by hand. In contrast there are also other factories that use the same operating sequence on all shoes year after year.

High Productivity in lasting comes from three factors:

- appropriate machinery;
- an accurate balance of work between operators so that you do not have the sole layer working at 110% and the seat laster at 70%;
- an appropriate incentive system.

There are many different systems for transferring shoes from one worker to another in a lasting line. They include:

- movable racks,
- paced conveyors (conveyors moving at a set speed) – single tier,
- variable speed conveyors (usually multi tier) of the DUORAIL type,
- rinks where the shoe is more or less handed from one operator to another.

The last two systems are those mainly used in modern factories. Paced conveyors do not generally produce high productivity though output is consistent.

Assessing lasting and making productivity

It is necessary on typical cemented shoes, men's, women's or children's to measure the output per worker hour of the people on a lasting line. The following is a well-tried method.

Let us look at a typical line:

- Worker 1* Takes last and upper off a rack, tacks on the insole and loads the shoe onto the conveyor.
- Worker 2* Forepart lasts the shoe.
- Worker 3* Lasts the seat and waist of the shoe and loads the shoe into the heat setter
- Worker 4* Takes the shoe from the heat setter, pulls out the insole tack and automatically roughs the shoe.
- Worker 5* Cements the bottom of the shoe and puts it into a drier.
- Worker 6* Takes the shoe from the drier and lays the sole.
- Worker 7* Slips the last and does other short operations and puts the last and the shoe onto racks.

So there are 7 operators. If the line works 8 hours/day and produces 1,000 pairs/day then it is producing 17.86 pairs/operative/hour as $1,000 \div 8 \text{ hours} \div 7 \text{ workers} = 17.86$

BENCHMARKS and GOOD PRACTICE:

- **Lasting and making line output per worker hour should be; with no automatic machinery (rough or cement) 16 pairs/worker/hour, with full automatic cement and rough 26-28 pairs/worker/hour. The best known is 32 pairs/worker/hour.**
- *Adjustments can be made for necessary extra operations but remember an important reason for low productivity is having a lot of unnecessary extra operations!*
- *Usually improving efficiency involves a two-phase approach. The first thing to do is to get rid of the unnecessary operations and improve the handling systems and balance. Investment in expensive machinery is very definitely the second phase.*

GOOD PRACTICE:

- *Combine small operations to reduce handling.*
- *No worker should pick up a shoe without performing an operation on it. In other words no workers should carry out a pure transport job. This can be done for example by the conveyor in a heat setter and similar operations.*
- *Balance is critical. It is necessary to measure each operation in the lasting department and combine jobs so that as far as possible every worker is equally fully loaded. This can involve splitting a job so that for example half the lasts are slipped from the shoes by the sole layer and the other half by the heel attacher.*
- *Proper balances need to be prepared for all of the main constructions used in the factory.*

Finishing

Finishing productivity is hard to measure because no one can tell exactly how many times it is necessary to polish a piece of leather.

Finishing departments have some operations that occur on all shoes like:

- putting in the sock,
- boxing.

Other operations are more variable:

- attaching trimming,
- inserting laces,
- dealing with problems, as where the leather finish has come off.

This means that the finishing department needs a lot of flexibility.

BENCHMARKS and GOOD PRACTICE:

- **There is probably something wrong if the finishing department employs more than 50% of the number of people in the lasting department.**
- *It is difficult for people working on final inspection to maintain concentration for the whole 8 hour shift. It is usually better to combine final inspection with the job of carrying out the last small final corrections and cleaning of the shoe. This varies the work and helps concentration.*
- *In any case quality standards are best maintained by an off line warehouse check.*

Component manufacturing

Many shoe factories have some kind of component or bottom stock section. Activities that may be involved are typically:

- cutting of parts which will be used in the lasting department, i.e. soles, insoles, stiffeners etc.;
- preparation of soles, whether this is the complete preparation of unit soles for women's shoemaking or the roughing and cementing of bought in sole units;
- preparation of insoles;
- heel covering;
- assembly of bottom parts onto units which can be attached to the shoe, i.e. pre-sticking of wedges to soles;
- leather heel building.

The way in which these functions are carried out varies from the use of highly automated lines for the preparation of soles and insoles which can have an output of 8,000 pairs/shift to the most manual and disorganized sticking together of pieces.

The problems of the component and stock section of a factory are made more difficult by the fact that the work needing to be done changes dramatically with the season and with the type of shoes being made. For many factories this means that production lines have to be reorganized very often, this is why in many factories this department is badly organized, has low productivity and is very untidy.

In shoe factories making shoes with leather soles and leather heels this section is an even more important activity.

GOOD PRACTICE:

The key decision that a shoe factory has to make is whether to do this work in the factory or buy the prepared pieces from an outside supplier. The following factors have to be considered:

- *If the factory is large, say around 6,000 pairs/day then it can justify the purchase of specialized automated machinery for making soles and insoles, but even in this case there is the chance that a specialized producer may be more efficient simply because he is a specialist.*
- *Below this production level buying from a specialist producer makes sense. However for leather soles a company can operate its own preparation line efficiently on 2,000 pairs/day.*
- *A great deal depends on the local shoemaking infrastructure. If the infrastructure is strong and there are good local specialist producers of components then the balance in favor of buying in will be stronger. On the other hand if the company is situated some distance from a shoe component cluster then there may be stronger arguments for doing the job in house even if the volume would not normally make this economical.*
- *If a company is in the business of providing a fast repeat service to its customers then there may be arguments for making some components in house to secure quick deliveries. It is not always easy to get component companies to supply broken size runs for repeats.*
- *If a company decides to make and or assemble its own bottom components then it should do so in a professional way with a properly organized flexible layout. It should also have the appropriate machinery, particularly drying systems, which allow for efficient handling and proper fume extraction.*

Bad Practice

- Making 800 pairs of insoles per day by mainly manual methods.
- Except in very special circumstances making your own injection moulded unit soles and heels. The plastics industry is a different trade.
- Hand cementing components and having nowhere to dry them properly. This is not only inefficient but produces a very considerable health hazard.

Human Resources [Management]

There are two basic issues concerning human resources in the footwear industry, qualification and motivation. The two have not always gone together, for example in the shoe industry of the former centrally planned economy countries in Central and Eastern Europe there was a high level of qualification but no motivation.

As far as qualifications are concerned the problems cover three areas:

- managerial qualification that may or may not be specific to the shoe trade;
- technical qualification required by such people as product development, supervisors etc.;
- training of the actual workers.

In general there has been a sharp fall in the training of technically qualified shoe trade management. This is mainly due to the decline of shoemaking activity in Western Europe and therefore a decline in the training activity not only of the various training schools but also by certain major shoemaking groups, which ran their own training schools. This is in part being compensated by the setting up of training schools in the new shoemaking countries.

The same is also true of operator training though it should be noted that modern micro processor controlled or assisted machines do generally make the training procedure considerably shorter for a number of operations.

It is clear that there is not one level of qualification required to operate every type of shoe factory. The skills required for operating a women's high price, high fashion factory are of a totally different order from those needed to operate a men's cemented casual factory.

Motivation mainly consists of two parts:

- making sure that people come to work on a regular basis which leads to low absenteeism,
- making sure that they work as productively as possible once they are at work.

In general it can be said that good marketing and good motivation are the two key factors that produce superior performance from Western Factories over those of the rest of the world.

Qualification

There are no valid benchmarks for qualification. It is clear that companies should choose a level of shoemaking appropriate to the skills, which are available to them and in the event that a company wants to operate at a more sophisticated level it should:

- either recruit people with the superior skills required,
- or arrange a training programme to enhance the skills of the existing personnel.

GOOD PRACTICE:

→ *All companies should aim to increase the skills of their existing workforce and should try and train incoming workers up to an adequate standard. On the whole the chances of recruiting workers who are already trained are not good.*

Motivation

Absenteeism

BENCHMARK:

→ **A company should operate with an absence rate of below 6%.**

High absenteeism makes it very difficult to operate a factory efficiently leading to excess labour costs. It also means that more people and more assets (buildings, machines) need to be employed to achieve the desired output. High absenteeism also reduces the chances of a company providing a reliable delivery service.

Among the reasons for high absenteeism are:

- Lack of proper control of the problem. Tough analytical action by HRM.
- Management can sharply improve the situation.
- Transport problems.
- Inadequate wage levels means that the money lost by a worker staying at home is not significant.
- Often this also connects to situations where pay in the main job is so poor that workers have second jobs.
- A local culture of absenteeism. This can occur for example in mining communities.

Payment Systems

There are many different views on what is the most appropriate payment system. In the west traditional payment systems have been based on individual incentives with only those on immeasurable jobs paid on a fixed basis, though the paced conveyor systems favored by the BATA organization from 1938 on were based on a more or less fixed wage because output was governed by the speed at which the conveyor was set, this guaranteed a certain minimum level of output but did not produce superior performance.

If incentive schemes whether they are group or individual are to be effective they must be seen to be fair and this involves reasonably accurate work measurement. If a company is making a wide variety of products it is hard to justify the cost of and time of precise measurement. This had led some companies to return to flat non-incentive payment, particularly in advanced economies. However unless this is done with a clear knowledge of what the real level of productivity was before the change and what it is now it can lead to a total collapse of productivity.

GOOD PRACTICE:

→ *Before making any switch to a non- incentive payment scheme make sure you have a clear idea of what real productivity is before the change so that you can measure the difference afterwards.*

There is a feeling that non incentive group working can bring many benefits in terms of flexibility, better quality, higher job satisfaction which offset any lower productivity, or less effective use of capital. The real situation needs to be checked out.

The normal division between individual and group payment is fairly easy to make. Cutters and Stitching workers working on classical conveyor or rack systems and non-rink lasting and finishing workers are paid on an individual payment system. Workers on TOYOTA and similar type stitching groups and workers on rink systems in lasting are on a group incentive.

Where there are severe measurement problems (due to very varied production) it may be appropriate to use a broadly based group payment system for the whole factory or whole departments based on a mixture of output, quality and other factors.

Quality Assurance

Historically shoe companies have always had problems with maintaining a consistent standard of quality. This has been for two main reasons:

- (i) The main raw material is a natural and variable product.
- (ii) The very large number of operations involved, many of which require considerable manual work.

However things have changed a lot in the past 20 years and there are quite a number of companies where a reliable level of quality can be taken for granted and is no longer an issue. Even among those companies that cannot reach this level there has been a considerable improvement in consistency and reliability.

It is interesting to consider the major influences that have changed quality performance over the last 25 years:

1. A better understanding of the “realities” of the inspection process:
 - (i) The limited time for which an inspector can maintain concentration.
 - (ii) The fact that an inspection system only filters out a proportion of the faults so that if a large proportion of the shoes are faulty then many faults will get past the inspection.
2. The huge influence of Japanese quality control methods that have led to much more responsibility being placed on the individual worker or the work group and far less reliance on quality control inspectors.
3. The influence of major customers who have insisted that certain critical operations be very closely monitored.
4. The whole idea of internationally accepted quality standards. These are of two types:
 - (i) Product related.
At present these mainly cover the safety footwear industry but within the European Union there is a movement for setting standards for other types of footwear where unsuitable products can endanger life or health.
 - (ii) Systems related.
The ISO 9000 and 9002 standards have been adopted by a considerable number of companies. In reality the adoption of these standards only has a guaranteed effect on product quality when they are linked to a shoe standard. In fact it is possible for a company to be certified under one of these standards and still give very bad service. However some companies have found that the exercise of certification has allowed them to document their systems in a useful way. Other companies think accreditation is a useful marketing tool.

There are two other areas where significant changes are taking place:

- Relationship with suppliers. The shoe industry is moving in the same direction that other industries have already done in placing more reliance on its suppliers quality control systems. There is a move for example for tanners to provide leather graded to shoemaker’s cutting department standards rather than tanner’s grades.
- An understanding that the key to many quality problems is not to design the fault into the shoe in the first place. Many faults are “designed” into shoes either by the specification of unsuitable materials, the use of risky constructions or just simple errors in pattern engineering.

BENCHMARKS and GOOD PRACTICE:

- **If a shoe factory has a defect rate of more than 3% it has a problem. Defects include factory repeats and customer returns.**
- *Try and design faults out of shoes. Do not use materials that will produce problems even if they are cheap. Study all returns from customers and analyze all the problems they reveal, not just the ones for which the shoe was returned. Aim for logical and simple upper constructions. Do not pile one reinforcing material on another.*
- *Generally it is not a good idea to 100% inspect work at various points in the factory as this reduces the feeling of quality responsibility among the workers.*
- *Overall the idea should be to create a feeling of responsibility among the workers. This is not helped by having a large quality control department.*
- *No inspection system ever totally halts a large flow of faulty shoes. It just filters out a proportion of them. It therefore cannot provide protection to the company against the damaging effect of a mass of shoes that are badly engineered or made with poor material.*
- **Final inspection should not be a job on its own as final inspectors cannot be expected to concentrate for prolonged periods. It is better to combine the final rectification of shoes (removing small pieces of dirt, painting over defects) with final inspection.**
- *A company's reputation for quality is best protected by an independent (of line management) inspection of shoes carried out after the shoes have been boxed. This inspection should be carried out more with the eye of a customer rather than with the eye of a shoemaker.*
- *All faults should be noted because the total volume of faults can produce a more reliable guide to the overall standard of quality in the factory rather than just noting the shoes that have serious defects for which they ought to have been rejected.*

Information Technology

Any shoe factory today even if it is quite small needs to use computer based management control systems to at least some degree.

The information technology (IT) requirements of companies in the shoe industry vary from the most basic accountancy and sales data to the extremely sophisticated systems used by the large branded wholesalers and retailers. It should be noted that the requirements of these big shoe trade companies are very demanding and this means that even some very well known multi industry systems prove inadequate when applied to the shoe trade.

For the most basic functions there are obviously masses of quite cheap and reliable software packages that are freely available. For more sophisticated functions there has historically been a temptation for a company to want to develop its own software and in the early days this was the only realistic option. However this locked companies into very complicated systems, which became obsolete, slow, and expensive when computing power increased and new operating systems became available.

So the obvious solution was for companies setting up new systems to buy standard packages developed for the footwear and clothing industries. Problems that has faced companies in the shoe trade are two:

- (i) The shoe trade (along with the clothing trade) *is* different in its systems requirements because of the problem caused by sizes.
- (ii) There have been surprisingly few standard packages developed for the shoe trade. Fifteen years ago there was only one standard package in the shoe trade used by more than 15 shoe makers.

For many functions the shoe industry is no different from any other industry and so absolutely standard packages are adequate. This includes things like material requirement programmes (MRP). Therefore for these tasks the shoe industry has a wide choice.

The difficulties arise on the sized aspects of the business and deciding whether:

- a) to do without if the company is small;
- b) buy one of the few standard packages available;
- c) develop your own.

Because of the generally undeveloped state of IT in many shoe companies a number of systems supplied to the shoe trade, like SATRASUMM are supplied as stand alone systems, so these can be used by any company even where it has a minimal IT capability.

Larger companies wishing to have more sophisticated operations can find it quite difficult to assemble a compatible suite of programmes to cover all activities. This is probably the reason why too many companies have their own systems which means they need a full IT department which is something that really should not exist in medium size companies today.

In terms of complication the systems needed for dealing with say 15 main customers on a forward order basis only are vastly simpler than those for running a wholesale (probably branded)

business with a large number of customers. In fact those companies that do provide specialized packages for the footwear and clothing industries usually supply three modules, manufacturing, wholesaling and retailing.

GOOD PRACTICE:

- *Unless you are a large company or have an exceptionally complicated business try and use software that is freely available on the market. Developing your own systems almost always costs 2-3 times as much as you think it will and equally takes 2-3 times as long as expected. In addition system maintenance costs are usually high.*
- *It is worth studying what functions are available in standard packages. If you believe that your business needs functions that are not provided in a standard package you should ask why it appears that you are right and everyone else is wrong!*
- *Total inter-connectability of all your systems may be a nice ideal but sometimes it is better to accept some imperfections in the links between different functions caused by running ready-made software rather than deciding to build a completely new system that has perfect links and costs a fortune.*
- *Any company with an old system of its own should consider very carefully the desirability of going through the normally heavy expense of updating rather than switching to a completely new preferably freely available system.*

Setting up a Performance Improvement Plan

Once a company has decided that it does below normal performance in a number of areas it should prepare a plan to improve things.

Saving costs and improving margins can be done to achieve one or all of three things:

- Stop the company making losses.
- Allow the company to make more normal profits for the business as it is.
- Allow the company to invest more in marketing expenditure such as the development of new markets or advertising new products, which should secure a larger more profitable business in the future.

To demonstrate how this can be achieved it may be useful if we use an imaginary example company.

Let us take a US\$ 10 million sales company which is currently only making 2% profit on sales before interest and tax but would like to make 8% which it regards as the amount it needs to sustain its long term business. It needs to improve its margin by 6% either by reducing costs or by improving sales margins. In money terms this is an improvement of US\$ 600,000.

If we are looking for a required saving of US\$ 600,000 we should normally try and identify savings of at least 25% more in case some of the savings proved difficult to achieve, say a total of US\$ 750,000.

In order to show how a profit improvement plan can be set up we need to know something about our example US\$ 10 million sales shoe company. Here are some key figures, although these are an example they are very typical.

Statistics:	US\$
Sales	10,000,000
Cost of materials (=56% of sales value)	5,600,000
Other costs, labour, overhead energy etc.	4,200,000
Profit	200.000

Some other important figures:	
Annual production	625.000 pairs/year
Daily production (<i>appr.</i>)	2,600 pairs/day
Average selling price	US\$ 16/pair
Total number of employees	550 people
of these: direct labour	400 people
management and indirect workers	150 people

There are 240 working days in the year. Average annual labour cost is US\$ 5,500/person. The company sells direct to major retailers in the domestic and export market.

The capital employed in the business is	US\$ 7,500,000
of this: raw material	US\$ 1,200,000
work-in-progress	US\$ 630,000
finished goods	<u>US\$ 1,150,000</u>
Total working capital	US\$ 2,880,000

Trade creditors and debtors just about cancel out so this means that fixed assets amount to US\$ 4,520,000.

It is possible to find savings in many parts of any business, but we should concentrate on the areas where normally largest potential savings are found. These are:

- saving leather in the cutting department,
- stitching efficiency,
- lasting and finishing organization,
- overheads,
- purchasing,
- marketing.

We will go through the saving opportunity.

Overheads

The company employs 150 people in activities, which do not add value to the shoes. This includes the Managing Director, the supervisors, the accountants, the mechanics and the person who cleans the cloakrooms. This amounts to around 27% of the total workforce where the benchmark figure is only 15% which would mean only 71 people being employed in indirect jobs. This means that a substantial reduction of 79 people in the administration function should be possible. This may be hard to achieve in a 2-3 year period so let us say we are to get the overhead percentage down from the present 27% of the total employment to 20%. This would reduce indirect workers from 150 to 100. So if we save 50 people at US\$ 5,500/year for each person we save US\$ 275,000.

Materials

The cost of materials at 56% of sales value for a company making normal women's shoes is too high. It ought to be around 50%. This indicates that the company should be hoping to save around US\$ 600,000 in material costs in one way or another.

A number of things will need to be done to achieve this:

1. Improve cutting efficiency. Of the company's total material bill of US\$ 5,600,000/year about 50% or US\$ 2,800,000 is leather; two things can be done to improve this:
 - (i) Install a proper leather utilization control system of the SATRASUMM or similar type. This involves assessing skins in a rational way, controlling the issue and use of leather and training cutters to achieve better results. A preliminary survey tells us we can expect a minimum saving of 6% of leather used and probably more. This amounts to US\$ 168,000.
 - (ii) A proper measuring machine can be installed to control tanners' deliveries, which should save US\$ 56,000.

2. Improve purchasing efficiency. This can cover a whole range of activities from buying from a wider variety of sources to just bargaining more toughly. Sometimes companies pay too much for leather because they don't negotiate hard enough or because they are unaware of what products and prices are available on the world market. It should be remembered that whilst a successful shoe industry needs a good infrastructure it is not the job of shoemakers to keep expensive or incompetent tanners or sole makers in business. In fact the local supply industry will not be internationally competitive unless it is subject to continuing comparisons with foreign suppliers.

On the basis of both Western and Eastern European experience it should be possible for the company to reduce its total purchasing costs by 10% or US\$ 560,000 per year but let us settle for a target of 5% or US\$ 280,000.

Stitching Efficiency

Conventional Machines

There are around 220 workers in the stitching department and as usual about 70% work on some kind of machinery and the rest are doing hand operations.

The company has a number of modern machines; in fact 84 workers have modern machines and 70 do not. If modern post and flat bed sewing machines were bought for these workers it would produce savings of 35% which is equivalent to a saving of US\$ 135,000/year (70 workers @ US\$ 5,500 = US\$ 385,000 x 0.35). But it would involve an investment of say US\$ 350,000 (70 machines @ US\$ 5,000 each).

Automatic Sewing Machines

The company produces women's fashion shoes that are not the best area for using automatic stitching machines. So this does not seem to be a priority area for investment but if the company should start to make casuals then the answer might be very different.

Overall Productivity of Workers

Overall the productivity of the stitching department does not look particularly good; in fact there seems to be a lot of wasted hand movement by many of the workers mainly because the company has not used any very scientific or organized methods of training in the past.

So it is decided that in preparing the programme it will be worth getting an institution or training agency to carry out a survey. This shows that better work measurement, better methods and better training will produce a saving of 15% on total labour costs or US\$ 181,500 (220 workers x US\$ 5,500 x 15%).

Lasting and Finishing Efficiency

The company has 3 lasting and finishing tracks making around 2,600 pairs/8 hour day throughout the year. So each track averages around 108 pairs/hour. There are 12 workers on each track so productivity is only 9 pairs/operator/hour. The equipment is good quality conventional machines (e.g. CERIM or MOLINA BIANCHI).

It should be possible to get to an output of 14 pairs/operative now just by reorganizing the lines, some small investment in conveyers and driers and doing away with unnecessary operations.

This will save 13 people leaving 23 on the lasting lines instead of 36 or a saving of US\$ 71,500/year (13 x US\$ 5,500).

Marketing

An analysis of sales shows that although the majority of the company's customers produce profits of around 4% on sales the situation is spoilt by one large German customer who buys 50,000 pairs per year on which the company loses 10% or US\$ 1.60 on every pair. This situation has got steadily worse over the years. The business used to be marginally profitable but as conditions in the German market have become tougher it has not been possible to get higher prices to compensate for increased material costs.

The company has other sales opportunities, in particular a mail order company in the USA, which requires high standards of service but is prepared to pay a price that will give at least the average 3-4% on sales.

If the German customer's orders can be replaced by normal margin work then this means an improvement of 12% on sales of 50,000 pairs @ US\$ 16 = US\$ 96,000.

Summary

This is a short list of examples of potential savings, obviously different companies may have many other opportunities for profit improvement. We now need to look at the total savings we have identified which comes to the large total of US\$ 1,737,000 against our target of US\$ 600,000 which is rather a comfortable margin, but it is not unusual to find savings of 15% and even more.

The next stage is to revise the list and decide which proposals should be included in the action list and what are the priorities. The company needs to prepare a chart which lists the projects and the potential savings but the chart should also include other information which will help the company decide which projects it wants to do and when. Our relevant information is:

- Capital expenditure required to achieve savings, i.e. buying new sewing machines.
- Revenue expenditure required, i.e. costs of consultancy to improve cutting efficiency.
- Managerial effort required for making changes. Buying new machines, which have already been tested, does not require much management effort, cutting a lot of supervisory and indirect workers does require considerable effort.

The results of this study are set out in the following table (see next page).

Project	Potential savings	Capital costs	Revenue costs	Management effort required
	US\$	US\$	US\$	
Reduce overheads	275,000	100,000 ¹		Considerable
Introduce new cutting control	168,000		45,000 ²	Moderate
Introduce new leather measuring system	56,000	15,000		Low
Improve purchasing	280,000			Moderate
New stitching machines	135,000	350,000		Low
Improve stitching productivity	131,500		90,000 ²	Considerable
Improve lasting efficiency	71,500	50,000 ³		Medium
Improve customer mix	96,000			Medium
TOTAL	1,263,000	515,000	135,000	

Remarks: ¹ Reorganizing offices.
² Consultancy.
³ New conveyors.

The priorities that companies give to different projects will depend on their circumstances. For instance a company, which has severe financial problems, may not be able to afford any capital expenditure. In any case it is interesting to note that buying new stitching machines has a longer pay back period than other activities. If it had been decided to use modern automatic roughing and cementing machines on the lasting tracks the pay back would have been even slower.

Once the action plan has been agreed and prepared the next stage is to implement it and to decide which projects will be completed in part or in whole by which dates. It is then a good idea to hold a formal review of the plan once every three months to see if there are difficulties and see that they are sorted out. It sometimes happens that the changes in the programme need to be made because;

- a new project is proposed,
- it becomes clear that one of the objectives is not achievable,
- projects are taking longer than expected,
- projects are being completed quicker,
- savings are greater than planned.

We can now look at the improvements that can be made in the amount of working capital employed.

The next issue is the effective use of working capital. At present the company's rather poor return on sales of 2% is made worse by the fact that at present the company only has an asset turn of 1.23 per year. (Assets US\$ 7.5 million, sales US\$ 10 million). So the return on assets is under 2.7% per year. All the stock figures are too high.

	Presently	Should be	Assets
	day	day	US\$
Raw materials: US\$ 23,200/day	51.5	30.0	501,000
Work-in-progress: US\$ 41,600/day	15.0	7.0	332,000
Finished goods	25.0	10.0	624,000
TOTAL			1,458,000

This saving reduces the capital employed to around US\$ 6 million, which boosts the return on equity particularly once the return on sales starts to rise. It also can obviously provide considerable help to the company in dealing with any problems it has with its bankers.

Dealing with the problem of too many fixed assets can be more difficult because clearly this requires a reduction in building space and in machinery which may be difficult to achieve even if the space is no longer needed as a result of improvements in capacity utilization.

Putting the Plan into Action

The final stage is to agree a timetable for the implementation of the plan and which involves the management in deciding what priority to give to each project. A total plan of this kind will probably take between 2½ to 3 years to implement though as can be seen some items can be dealt with very quickly. In fact the whole purpose of this project is to identify changes that can be made quickly and with little effort so that financial savings can be made as early as possible.

An example implementation programme is attached.

It is important to remember exactly what the figures mean. When a figure appears in the performance improvement plan it means that action has been taken which means that by that date (say 1 January in the next calendar day) the number of people in the indirect category has been reduced by 5 which produces recurring annual savings of US\$ 27,500.

The cumulative figure shows the total effect of progress made in implementing the plan. So a bottom line improvement has been made at the rate of US\$ 800,000 by nine months after implementation started but it is important to remember improvement does not show up fully in the accounts until a year after the change is made. Savings quoted are for “annual rates”.

It is very important that this is clearly understood otherwise they expect to see big jumps in profit long before they actually will. This is particularly crucial if the plan is being used to convince the company’s bankers that a recovery programme is on schedule.

Summary of performance improvement programme

Unit: US\$ thousands

Project	Savings	Effort	One-off capital and revenue costs		Year 1				Year 2				Year 3	
			Item	Value	1	2	3	4	1	2	3	4	1	2
OVERHEADS	275.0	C	Office reorganization	100.0	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5	27.5
MATERIAL														
Improve cutting efficiency	168.0	M	Consultancy	45.0	68.0	100.0								
Install leather measuring	56.0	L	Measuring machine	15.0		56.0								
Improve purchasing	280.0	M			30.0	50.0	50.0	50.0	50.0	50.0				
CLOSING/STITCHING														
Install new machines	135.0	L	New machines	350.0	50.0		50.0		35.0					
Improve productivity		C	Consultancy	90.0				70.0		70.0		41.5		
LASTING														
Improve efficiency	71.5	M	New conveyors	50.0		71.5								
MARKETING														
Improve customer mix		M						48.0		48.0				
<i>Period total</i>					<i>175.5</i>	<i>305.0</i>	<i>127.5</i>	<i>195.5</i>	<i>112.5</i>	<i>195.5</i>	<i>27.5</i>	<i>69.0</i>	<i>27.5</i>	<i>27.5</i>
Cumulative total					175.5	480.5	608.0	803.5	916.0	1,111.5	1,139.0	1,208.0	1,235.5	1,263.0

Remarks: C – considerable
M – moderate
L – low

The Role of Trade Associations and Research Institutions in Organizing Benchmarking Activities

We have already noted that trade associations and research (R&D) institutions may have a role to play in organizing benchmarking groups. This has already been done by a limited number of organizations within the shoe industry. In other industries there seems to have been more activity. We should remember that one of the main reasons why industry bodies get involved in this sort of activity is that they can assure the necessary confidentiality that encourages companies to provide data. It is usually also a considerably cheaper route than engaging expensive specialized consultants to build bridges between companies.

The impetus to set up industry benchmarking groups can come from:

- A group of progressive companies in the industry that are trying to improve their performance.
- A trade or research association, which wants to find out exactly what the situation is in the industry.
- A government department or again a trade association that wants to check on the competitiveness of the industry.

The output of the benchmarking exercises can be used for:

- Companies carrying out a programme of self-improvement.
- Trade associations and R&D institutions offering consultancy and other help to companies which have problems shown up by the benchmarking exercise. This can also involve companies which were not part of the original benchmarking exercise but who have had their figures compared against the original benchmarks.
- Aiding Government decision making on a variety of topics such as:
 - What kind of assistance might be offered to the industry?
 - Is the industry internationally competitive?
 - Has the industry got a future?

Benchmarking exercises carried out on behalf of governments or trade associations very often include some wider comparisons outside the industry and outside the country.

Problems

It might seem quite easy to set up a benchmarking “club” in an industry and it might seem likely that quite a number of companies would want to use the data to improve their performance. But there are quite a number of problems, here are some of them:

1. How useful is the data produced? Certainly from the data collected it will be possible to say which company is the best performer and which the worst and what the median is for a particular statistic. This can tell a company that has performance close to the best in the survey that it is doing well against other companies in the survey. It does not indicate that
 - companies in other countries perform infinitely better.
 - companies in other industries perform similar functions much more efficiently
 - the procedure is old fashioned and irrelevant and ought to have been abolished a long time ago.
2. In the shoe trade there is a huge problem of comparing companies, which not only make totally different types of shoes but also market them in a totally different way. One shoe industry

association that carried out a benchmarking exercise found that it was necessary to divide the participating companies into eleven categories in order to get any kind of comparability.

3. Generally it has been found that whilst most companies are quite interested to know what their position is in relation to others, other companies do not want to know, very probably because they are frightened of the truth. This leads to the situation where companies which have nothing to show are most secretive and least likely to want to participate in a benchmarking exercise whilst those which are progressive and do have something to show are most likely to want to be involved.
4. There is the basic problem of persuading people to take action, this can be at two levels.
 - At company level where the management has too many problems and does not want to make the effort to make change.
 - Inside the company where managers do not want to make change and argue that.
 - The figures are not comparable.
 - That their company is different.

These attitudes can continue even when the company is in a severe crisis.

What is the Best Way Forward

1. There is no real problem with information gathering benchmarking studies just designed to collect data and without any improvement objectives. Segmentation can be carried out if it is felt to be useful. It may also be possible to use the data collected as a tool for selling consultancy services.
2. Benchmarking to achieve performance improvement is a totally different matter.
 - Firstly there is no point in trying to get chronically secretive and incompetent companies involved.
 - It has to be recognized that the main result of a successful benchmarking exercise is to make the best in the industry better.
 - Benchmarking clubs must be voluntary and the better companies who want to improve their position are the ones that will wish to join the club.
 - It is clear that a real added value for the club members is if the sponsoring organization and/or association can get data from other countries or other relevant industries.
 - As only relatively few companies in an industry are likely to want to join the club it is almost certain that they will not be precisely comparable. For this reason it may well be better for benchmarks to be more broad based indicators rather than precisely calculated measures. The sponsor can then provide some indicators in the reports he makes saying that a particular result was due to particular circumstances.

Manning Structure for a Model Business

Example 1

These figures have been used as a target for overhead reduction programmes. They are figures based on good practice in a number of companies.

The model business deals direct with large retailers, say 20 customers. Employs around 960 people. Makes 10,000 pairs/day with 280 new models/year. Operates in single site and single shift.

	Category	Person
	Direct labour	
	Cutting and Stitching Preparation	102
	Stitching	540
	Sole and Insole cut and prepare	80
	Assemble and finish (10 rinks)	94
	<i>Sub-total:</i>	<i>816</i>
	Indirect employees	
*	Director and secretary	2
*	Personnel (1 Manager, 2 Records)	3
	Accounts, costing and pay	12
	Marketing	2
*	Sales (1 Sales Manager, 2 Representatives, 6 Office)	9
*	Buying (1 Buyer, 3 Assistants)	4
*	Planning (1 Planner, 1 Documents, 1 Assistant)	3
*	Design and development (1 Design and 2 PE; 1 Bottoms and 2 General)	6
	Sample making	6
*	Production Management (1 Secretary, 2 Technical Dev., 2 Quality Control and 4 Work Study)	10
*	Foremen	4
*	Supervisor (2 Cutting, 8 Stitch, 4 Soles, 6 Assembly)	20
*	Line loaders, assemble parts and repairs	18
*	Mechanics	10
	8 Cleaners, 2 Security, 2 Transport	12
	Raw material warehouse	6
	Finished goods	8
	Trainees	3
	Canteen	6
	<i>Sub-total</i>	<i>144</i>
	TOTAL	960

* Indicates a figure which as been benchmarked.

The model has total employment of 960 direct and 144 indirect workers, which is 15% of total employment.

Example 2

This is the plan for a factory that was prepared prior to the business being set up. It has now been in operation for more than a year and the figures achieved are actually somewhat better than this target.

Assumptions

- It is planned to produce 1,600 pairs/day: 800 men's + 800 women's.
- The average work content is 65 standard minutes/pair of which 35 min/pair are in stitching.
- The factory will work 8 hours per day and the workers are considered to be highly skilled and capable of working at 70 performance on the 60-/80 performance scale.
- Absenteeism is calculated at 10%.
- The factory will operate on one 8 hour shift except in stitching where 2 x 8 hour shifts will be required.

Calculation of Number of Direct Workers

- 1,600 pairs/day at 65 min/pair = 104,000 min/day.
- Adding a non-productive labour percentage of 15% produces a total daily minute requirement of 119,600.
- Assuming a performance level of 70 this can be produced in 8 hours by 214 workers.
- Making allowances for the 10% absenteeism this produces a total requirement for production workers of 235 people.

Indirect Workers

Manager and secretary (who also does personnel work)	2
Accounts, pay, customs documentation	4
Planning	1
Product engineering	2
Sample production	3
Stitching foreman	1
Supervisors	7
Stitching conveyor loader	4
Mechanics	3
Cleaning and security	6
Materials	4
Canteen	<u>2</u>
	39

Final Calculation Total	Employment	274
	Directs	235
	Indirects	39

Share of indirect employees 14.23%