

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
20th May, 1998	Harare	Fur-1	Managing Director

Evaluation	Points *	
Technology	3	
Production Quality	3	
Profitability	4	
Marketing	4	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : N/A Sales : Z\$ 400 - 600 Number of Employees : 14

2. Facts Found and Analysis Results

2.1 Products

The company's products are diverse and range from small woodcrafts to high quality, large furniture and further to the manufacture of antique-style products using such waste wood as old sleepers and mine timber. As the products are aimed at the export market, they are not seen in furniture stores in Harare at present.

2.2 Machinery and Equipment

The circular sawing machine for the sawing of sleepers and mine timber was made in-house and the minimum range of equipment required to manufacture furniture is in place. However, the main equipment, including the automatic single-face planing machine and hand planing machine, is rather old and is approaching the end of its life-span.

2.3 Technology

As the sleepers have cracks which reach to the core due to long exposure to rain and wind, it is impossible to remove the cracks by means of careful sawing. The key for the company's furniture design is the active incorporation of the patterns created by the cracks in order to manufacture dining tables, chairs and large cabinets, etc.

2.4 Quality

As the sleepers are made of hardwood, cutting and drilling are rather difficult. In addition, the old machinery makes it necessary to often rely on manual work which is a cause of quality decline. However, minor dimensional inaccuracies and qualitative defects are accepted because they are considered to be characteristics of antique-style furniture.

2.5 Basic Principles

The owner believes in the recycling of waste wood as a means of conserving wood resources and markets his products to antique enthusiasts in Europe and the US using recycling as a sales point.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
20th May, 1998	Harare	Fur-2	Factory Manager

Evaluation	Points *	
Technology	2	
Production Quality	2	
Profitability	2	
Marketing	2	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : N/A Sales : _____ Number of Employees : 12

2. Facts Found and Analysis Results

2.1 Products

This cooperative plantation business has a woodworking division which mainly uses pine timber and block boards for the manufacture of various types of wood furniture based on orders placed by related organizations. The box-shaped storage furniture in particular is characterised by the use of block boards.

2.2 Machinery and Equipment

All the necessary machinery and equipment for furniture manufacture are in place and are relatively newer than those generally possessed by private furniture manufacturers. The production capacity is well established. Particularly impressive are the wide belt sanders and belt sanders which are essential for the finishing of pine surfaces.

2.3 Technology

While the factory space appears to be sufficiently large for the number of employees, materials, etc. are randomly placed with a resulting lack of proper passageways. As worktables are used for various items, the actual production work appears to be conducted on top of unstable (hand-made) platform cars.

2.4 Quality

There appears to be too much dependence on such grinding machines as wide belt sanders for the finishing of pine which is a softwood. The smoothing work using hand push planes or automatic single-face planing machines, i.e. one stage before finishing work, is poor, resulting in a decline of the product quality.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
21st May, 1998	Harare	Fur-3	Factory Manager

Evaluation	Points *	
Technology	3	
Production Quality	3	
Profitability	4	
Marketing	3	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 4.5 million Sales : Z\$ 2.5 million Number of Employees : 90

2. Facts Found and Analysis Results

2.1 Products

Arm chair of Sofa & Love Chair using pine materials

2.2 Production

Type of products are minimized, and this led to a simple factory layout. Eventually, production control is simple and productivities are improved due to elimination of unnecessary things.

2.3 Machinery and Equipment

Stream lined production flows were observed and arrangement of machinery, equipment was in good order.

Number of workers seems minimized due to stream lined production.

2.4 Raw Materials

Material used are pine, and it seems not strong enough for the chairs that this factory is making.

2.5 Layout

Semi-processed parts are stored just between fabrication and assembly stage, which gave good flow of production.

2.6 Quality

Quality of products seems to be in line with demand for rather high class consumers. However, structure of joining wooden frame seems not acceptable for this grade of furniture.

2.7 Future

Factory is planning to increase its product amount by increasing the number of workers. Present facility may not face difficulties, but the company must carefully handle its production planning to avoid unnecessary confusion of balance among different process line.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
21st May, 1998	Harare	Fur-4	Manager

Evaluation	Points *	
Technology	4	
Production Quality	4	
Profitability	3	
Marketing	4	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 4 million Sales : Z\$ 1.2 million Number of Employees : 90

2. Facts Found and Analysis Results

2.1 Products

The company mainly manufactures garden tables and chairs using pipes and wire of various sizes. Wooden shelves for metal cabinets were seen in the factory during the visit but were ordered externally. Apart from garden furniture, the product range includes dining sets, beds, bunk-beds and display shelves.

2.2 Technology

Compared to a wood furniture factory, the work at a metal furniture factory is simpler due to easy assembly by means of welding and other features. Accordingly, the variety of machinery required is much smaller than in the case of a wood furniture factory. The company emphasises its technical strength and believes that further technical training for employees is required.

2.3 Quality

The strength of the joints is determined by the welding quality. The surface finish, which is related to the painting technology, does not appear to pose any problems at present although the durability must be separately assessed.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
21st May, 1998	Harare	Fur-5	Managing Director

Evaluation	Points *
Technology	3
Production Quality	3
Profitability	4
Marketing	4
Labour	3

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : N/A Sales : Z\$ 3 million Number of Employees : 85

2. Facts Found and Analysis Results

2.1 Production

The company is engaged in the large-scale manufacture (with 85 employees) of antique-style tables, cabinets and chairs, etc. using cracked sleepers. The raw materials are supplied domestically (70%) and from Mozambique (30%) although there is concern in regard to the increased difficulty of importing raw materials in the future. The product design appears to be largely attributable to the white owner.

2.2 Machinery and Equipment

The factory building looks like a large warehouse and assembly work is conducted inside the building. It has a roofed outside area where machinery is installed. Among the available machinery, only large circular sawing machines are noticeable. The number of machines is rather small compared to the number of employees. Many of the machines are old and in poor condition, the state of which cannot be imagined from the fine completed products.

2.3 Technology

The use of waste hardwood without sufficient machinery means heavy dependence on manual work, resulting in inaccurate dimensions and poor work efficiency. The manufacturing work ignores the defects of members and crack repairs and the filling of holes and other defects are literally conducted at the final finishing stage employing human wave tactics.

2.4 Quality

The products of this company are characterised by the filling of the cracks in waste wood with pieces of wood and/or putty. The resulting pattern emphasises the antique-style design and compensates for the somewhat imperfect quality. Belt sanders and other tools are used to finish the surface of the hardwood and the product quality is maintained by reasonable technical skill.

2.5 Product Design

All of the products have an orthodox style and the key to manufacturing antique-style furniture is the skillful exploitation of the patterns created by the cracks in the raw materials.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
22nd May, 1998	Harare	Fur-6	Factory Manager

Evaluation	Points *	
Technology	4	
Production Quality	4	
Profitability	4	
Marketing	4	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital: Z\$ 4 million Sales : Z\$ 300,000 Number of Employees : approx. 10

2. Facts Found and Analysis Results

2.1 Products

Employing some 10 workers, the factory is located in a plantation created with the assistance of the Danish International Development Aid. The manufacture of furniture is one of several businesses and pine timber is mainly used to make cabinets, tables and chairs. The factory is accompanied by a training workshops and the trainees also work in the factory.

2.2 Machinery and Equipment

The factory has two buildings of some 200 m² each. The shopfloor is brightly lit and the machines required for the manufacture of furniture are all new.

2.3 Technology

The technology to produce pine plywood boards is available. These boards are used to manufacture unit-type cabinets and both the design and skill are of export quality. The level of skill is quite high, underpinned by the enthusiasm and technical capability of the factory manager who is in charge of factory management.

2.4 Quality

As strictly selected materials are bound together, the components do not have cracks and/or chips, making filling with putty, which is a common practice at other factories, unnecessary. The manufacturing method is appropriate and the product quality is better than at most other factories.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
22nd May, 1998	Harare	Fur-7	General Manager

Evaluation	Points *	
Technology	3	
Production Quality	1	
Profitability	4	
Marketing	3	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$10,000,000 Sales : NA No. of Employee : 54

2. Activities of the Company

- The company produces the following products:

- Wooden Cabinets
- Coffee tables and chairs

- Major markets

Furniture retailers in Harare

3. Findings and Analyses

- Machinery, equipment and tools are sufficient in quality and quantity, but their operation skills are inadequate. For example, the workers use less sharp cutting sows, resulting in producing coarse cutting edge and a number of unnecessary chippings. This kind of careless work will lead to the failure of making a quality product.

- Quality of the products is low and needs improvement. Although the company possesses necessary number of modern machinery and equipment, the quality of products is at a low level. The reason for this may be analyzed as follows:

- ① The skills and techniques of workers are inadequate.
- ② Lack of quality standard for each product.
- ③ Working table is not suitable for woodworking.
- ④ Assembling work is done on a rough floor, resulting in the formation of deformed products.
- ⑤ A quality controller does not control product quality.

4. Advice of the Team

- The company should endeavour to improve productivity and product quality by drastically upgrading the capability of markets.

- The company management envisages to manufacture products which will be sold to foreign markets, but the present condition of the products is far from its realization in terms of their quality and productivity.

The company needs to double its efforts to increase its productivity and manufacture their products in such a way that they satisfy the specific requirements of customers if the company really intends to penetrate foreign markets.

THE DIAGNOSTIC STUDY REPORT - WOODEN FURNITURE

• Date: 7~9 June, 6 August, 1998

• Company Code: Fur-7

(1) States quo of the model enterprise

The factory's performance cannot be highly evaluated because it has failed to achieve what it should have achieved with its abundant production facilities.

It is said that the factory exported its products to neighbouring countries in the past, but now the factory sells its products only in the domestic market.

However, the factory is not satisfied with the present situation and would like to expand its activities if the opportunity arises.

The factory has the potential to challenge export market by improving the quality of its products and by increasing its productivity.

(2) Export promotion strategy

In order to manufacture products that will satisfy the demands of foreign customers, the following measures are indispensable:

- ① Select suitable materials such as good quality particle boards and hard boards.
- ② Improve the manufacturing process and product quality.
- ③ Make more attractive designs
- ④ Improve productivity and double the efforts of the management to make the products competitive.
- ⑤ Adopt the strategy of selling furniture as sets and not as a single unit.

(3) Fittings

It is hard to increase the share of exports unless the factory uses high quality fittings such as handles, hinges, and locks procured from abroad.

The key point of success is to use expensive or expensive looking fittings.

(4) Trial production of Export Samples

Quality improvement is one of the most important factors for success in foreign markets.

It is essential for the factory to prepare a set of fine furniture that can be used as a model for export. Management must explain to the workers the manufacturing process and what is required of them.

(5) Promotion of wooden furniture

The chairs and coffee-tables made of pine have a better chance of success in export markets than those made of particle-board.

Generally it is not easy to make high quality furniture using pine but a successful effort to do so would be meaningful and rewarding to the factory because it could then increase the use of domestic materials.

The use of expensive Mukwa wood is considered to be an effective way to make a value added product, but it requires wood working techniques and skills.

(6) Pine and its strength

The drawbacks of pine are that it is soft and has a low specific gravity. We should be aware of these drawbacks when we make furniture with pine.

In order to supplement the weakness of the material, we may produce the desired furniture using thick materials.

(7) The colouration of pine

Natural color of pine is splendid.

To make products made of pine look more expensive, special coloring techniques are needed. For example, we can make a pine furniture look like walnut furniture with the effective use of varnish. In this sense, a study of coloring techniques needs to be done by the factory engineers.

(8) Points to be improved in daily activities

In order to promote the productivity and improve the quality of products as required for export markets will require a tremendous effort on the part of the factory. These efforts will not be rewarded, however, if the factory neglects the fundamentals of the manufacturing processes.

The followings are some suggestions regarding these fundamentals.

(a) Maintenance of chip saws

Chip saws should always be well maintained to keep them sharp. In checking the repair and maintenance conditions of the chip saws, the technicians in charge should examine the tooth angles, tooth styles, tooth sharpness etc. before they present the saws to the machine operators.

(b) If the top board of the operation table is too soft, it is unsuitable for wood processing work. It should be replaced by a more solid board.

(c) The workers in the factory varnish their products and then place the directory on the floor. This forces the workers to take unnatural posture and causes them to suffer from lumbago. It is advised that the workers varnish their products on a working table which is appropriate for their height.

(d) At present the parts assembling work is done on the rough floor. As a result, many products are twisted or deformed when completed. It is recommended that the work be done on a flat table or board.

(e) The aperture between the drawer and the side board is too wide. It is advised that the workers pay more attention in measuring the materials so that their products are made according to the design.

(f) Small materials like nails and wood screws are not kept in an orderly way, causing the workers waste time to find what they need. It is advised that these materials are kept in classified boxes.

(g) A number of waste wood blocks are scattered on the floor. It not only disturbs work efficiency but also sometimes causes injuries among workers. It is advised these waste materials be kept in the designated place in order.



Management Review

- Built up reputation since established in 1981
- Big factory capacity & mass production
- Strong management team with a skilled labour
- Tight cost control using own cost formulation rate
- Now, facing with turning point for export marketing
- Suffering from price hike of raw material timber, high interest rate and weak exchange rate for import of metal accessories
- Cut back of labour forces from 154 once to 54 improving productivity and dispose of stock done

Marketing Review

- Export to Europe long time but unstable due to keen competition with Brazil, etc.
- Efforts to develop other export market such as RSA
- Domestic market-400 customers including 3 big customers
- Develop new product or increase series of present products range for wider selection by customers

Corporate Profitability

Ratio	Indi	(a) 1997	(b) 1996	(c) 1995	(d) Japanese Index
A1	Operating Profit to Net Sales 	0.9	0.9	2.9	4.8
A2	Gross Profit to Net Sales	16.1	13.3	15.3	22.8
A3	Operating Profit to Working Capital 	1.9	1.9	6.3	5
A4	Operating Capital to Turnover	2.1	2.0	2.2	1
A5	Selling & Admin. Expense to Sales	15.2	12.4	12.4	18

Corporate Soundness

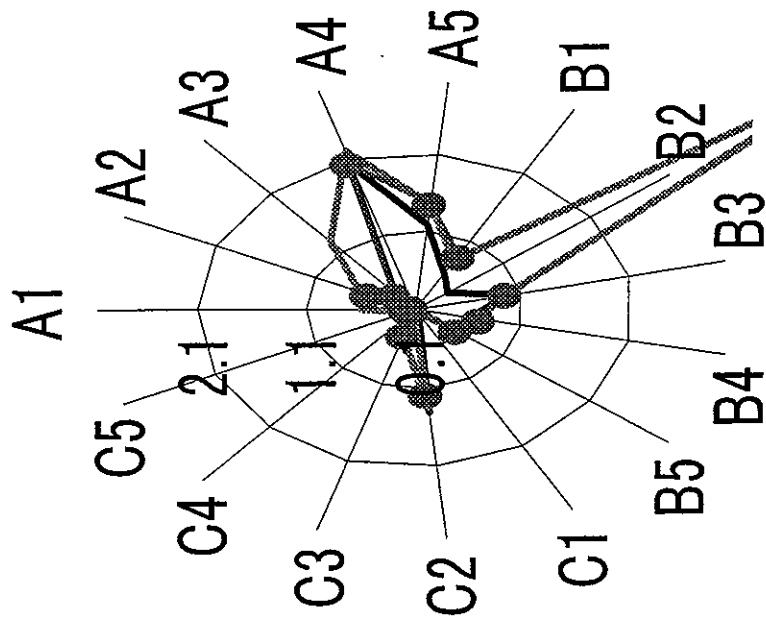
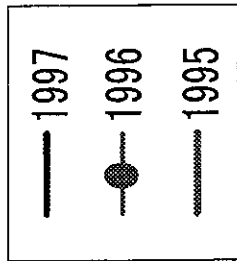
Ratio	Indi	(a) 1997	(b) 1996	(c) 1995	(d) Japanese Index
B1	Net Worth to Total Capital	21.7	31.5	28.9	36.3
B2	Interest Paid to Sales	3.8	0.4	0.3	1.7
B3	Fixed Assets to Long term Capital	91.0	91.1	93.8	87.2
B4	Current Ratio	109.3	124.9	122.5	180.6
B5	Quick Ratio	79.0	74.6	66.0	135.6

Productivity

Ratio Indi	Indi	(a) 1997	(b) 1996	(c) 1995	(d) Japanese Index
C1	Annual Production per Head	536.7	167.9	133.8	8925
C2	Personnel Expenses to Processed Amount	33.4	40.0	34.4	46.6
C3	Processed Amount to Net Sales	31.9	29.6	32.8	67.7
C4	Efficiency of Machinery Investment	2.1	1.2	1.3	9.6
C5	Machinery per Head	250.9	143.5	103.0	2928

Ratio Indi	Indi	(a) 1997	(b) 1996	(c) 1995	(d) Japanese Index
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A2	Gross Profit to Net Sales	16.1	13.3	15.3	22.8
A3	Operating Profit to Working Capital	1.9	1.9	6.3	5.0
A4	Operating Capital to Turnover	2.1	2.0	2.2	1.0
A5	Selling & Admin. Expense to Sales	15.2	12.4	12.4	18.0
B1	Net Worth to Total Capital	21.7	31.5	28.9	36.3
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C5	Machinery per Head	250.9	143.5	103.0	2,928.0

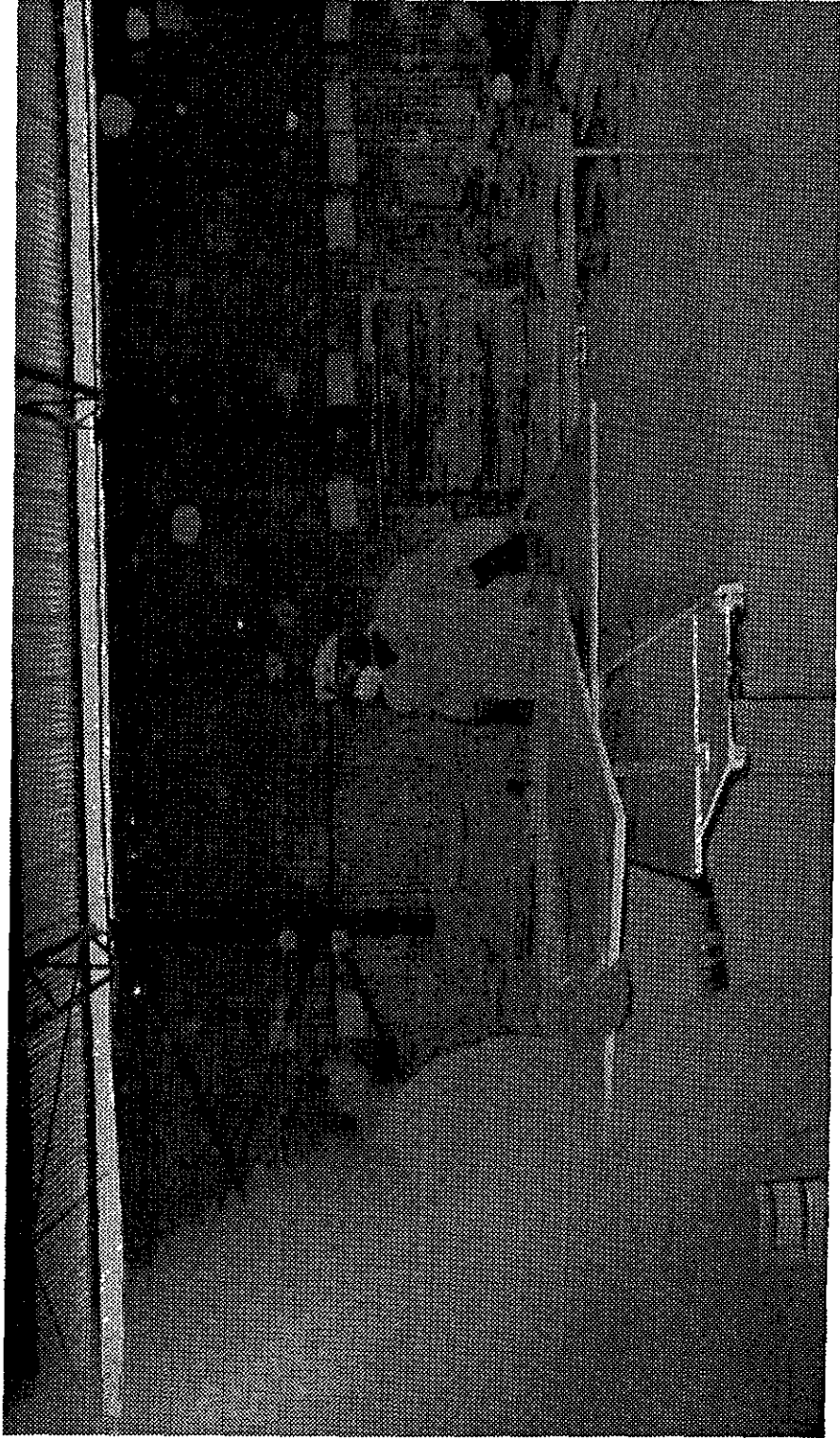
YEARLY COMPARISON



Questions before recommendation

- What is your priority in management ?
- Are you making future development scenario ?(target on sales, profit and labour force ?)
- In view of difficulty in export to France, how do you tackling developing new market ?
- Have you updated your cost formulation as reduced number of work forces ?
- For quality control, are you prepared to accept Mr Ukawa's advice ? (Set priority)

Quality Control & Export



FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
26th May, 1998	Harare	Fur-8	Managing Director

Evaluation	Points *	
Technology	4	
Production Quality	4	
Profitability	3	
Marketing	3	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 729,000 Sales : 4.5 million Number of Employees : 50

2. Facts Found and Analysis Results

2.1 Products

Although the company was established in 1997.

The machinery and equipment are old and obsolete, because it hasn't renewed any equipment after it took over company closed by an English owner. The average length of service of employees are 6 to 10 years.

The company mainly produces dining tables, chairs, drawers made of pine woods for home.

The level of products are evaluated on mid – level higher.

Half of products are exported to South Africa (50% of total export), Malawi and Botswana by using the route developed by the former owner of the company.

2.2 Machinery and equipment

The number of machinery is enough for furniture production.

However, in order for the company to produce more value-added products, it is recommended that it be equipped with some modern machines such as a wide belt Sander and a body press. It seems that the company will accept the recommendation.

The present machinery and equipment are considered appropriate for the scope of the

company's activities.

2.3 Technical aspects

Technical level aspects of the employees is evaluated as intermediate. With this level of techniques it may be possible to manufacture chairs and tables of acceptable quality. However, in order to make big size furniture like wall shelves (105cm in widths), they have to develop their skills in handiwork for wood joint and surface finish.

2.4 Quality of products

It is observed that the quality of export items is superior to that of domestically oriented products. The reason for this is that the export items are subject to stricter inspections. Upon close examinations, we have found a number of defects and draw backs related to the quality of export furniture. For example big size furniture like wall shelf which has a lot of parts is inadequately fabricated due mainly to the lack of correct measuring techniques.

When we checked the quality of a finished product, we found unnecessary space between drawer and its main body. It is easy to make furniture of pine wood, because the material is soft and easy to handle. However, it is difficult wood to produce higher quality with the pine wood. As the material is soft, it is not easy to make the surface completely smooth. In order to solve the above problem, it's imperative for the company to install more efficient belt sander and employ higher finish up technique. In our judgement, furniture, which is heavily painted on the surface with clean traces of planing, can not enjoy high reputation.

2.5 Design

The company wishes to develop it own new designs. The development of new design is necessary but is very difficult to realize.

It is advised that the Company try to produce products with orthodox designs Commonly accepted in the market. To make products in the above way requires tremendous efforts, but is highly rewarded.

THE DIAGNOSTIC STUDY REPORT - WOODEN FURNITURE

- Date: 21~23 July, 16 October, 1998
- Company Code: Fur-8

1. Outline of the company

The present owner and manager started his activities of the company by renting factory from an English business man who closed company. The owner manager, 42 years old, and has wide experiences of furniture production at large. He plans to expand his activities, including production of light quality furniture. The company main products are couches and shelves all of which are made of pine wood. Half of products are for export by solid pine wood, and a half of products is exported.

2. Quality of export items

1) Couches

The company has to assemble frames of couches and puts springs inside, and the rest of the work including application of close and cushions is done by buyer's who ultimately export the completed products.

2) Dining tables

Dining tables & chairs designed in the company, dressers with mirrors, shelves, and head boards are all made of pine woods. They are exported.

Considerable amounts of furniture having defects or having been broken during transportation is kept in a company's warehouses.

The Company seems to be much concerned with the increase of such furniture. Although quick action to improve products is necessary, but they have no clear idea to solve the problem.

We checked the returned items and determined the cause of damage at the factory. We found the defects are not fatal. Therefore, we explained the method to solve the problem, including the preparation of checking sheet to keep record of returned (defective) goods.

3. Method of production

They don't have any systematic work plan, each worker works separately. Therefore their work can not efficiently. The Company is not equipped with enough member of suitable jigs and tools, and, so the workers have to share these. As a result, they should wait their turn for a long time.

Every furniture making work follow the work standard prepared by the company. Otherwise they are unable to make quality components and assemble them into a piece of furniture worthy of the name.

In order to produce a quality furniture, the following measures are essential:

- ① Preparation of manual or work standard which shows the scope of work by machines, method of land work, assembly method, standard time to be spent for each work, etc.
- ② Preparation of manual for the operations of machinery and equipment.

4. Processing of pine wood

Pine wood is soft on surface and easy for treatment. However it lacks strength because of its low.

This material if it finished up white is easily damaged scratching or stains.

It is also unable to the rays of the sun, and its surface changes from white to yellow in the passage of time. It is true we have some method of coloring pine wood to look good. For example, we can cover the surface with chemical paints in deeper or darker colors. However, use of this method depends on consumer's requirements. At the Company, we trained the works and technicians in the effective method for quality improvement, and the details of which are shown in "EXAMPLE OF FACTORY IMPROVEMENT". The following is the summary of our interactions:

I showed some improvement and important points are as follows.

1. The method of making sheets for keeping record of returned goods
2. The method of making manuals and work standard for each work.
3. The method of assembling couches after making cushion, arms and back.

4. Improvement of returned furniture

4.1 Improvement of hole of dresser with mirror

4.2 Improvement to space between the main mitigate the body and the its door or drawings

4.3 How to lessen damage during transportation

4.4 How to lessen useless space between square wood

5. Basic measuring method of deciding nail and wooden screws

6. How to use and choose suitable press machines

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
27th May, 1998	Bulawayo	Fur-9	Director

Evaluation	Points *	
Technology	3	
Production Quality	3	
Profitability	3	
Marketing	2	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 40,000 Sales : Z\$ 240,000 Number of Employees : 33 (20 in factory)

2. Facts Found and Analysis Results

2.1 Products

Production operation is divided into three areas, i.e. (i) sofas and armchairs, (ii) wardrobes and other storage furniture using particle boards and (iii) dressers of a similar structure and quality to those made by open-air furniture workshops. The products in the third category are manufactured outside the factory buildings. None of the products of any furniture category are exported.

2.2 Machinery and Equipment

The minimum production machinery and equipment are in place and are mainly used for the processing of the wood components of armchairs and sofas. In addition, home-made tools and small wood processing machines are available but the product range is limited.

2.3 Technology

The processing of the wooden frames for armchairs and sofas is rather rough. While the durability is questionable from the viewpoint of the frame strength, the finished products with cushion materials and upholstery appear fairly attractive. In the case of

wardrobes and kitchen dressers using particle boards, all of the components are assembled using adhesive and nails. They give the impression that they could break into pieces during transportation.

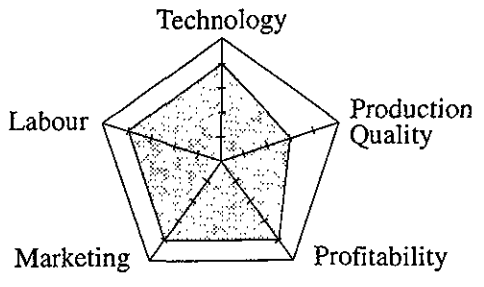
2.4 Quality

In view of the business scale, the product range appears to be too diverse, making it difficult to produce high quality products with a technically focused approach.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
27th May, 1998	Bulawayo	Fur-10	Managing Director

Evaluation	Points *
Technology	4
Production Quality	3
Profitability	4
Marketing	4
Labour	4



(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 3 million Sales : 1995 - Z\$ 5 million Number of Employees : 50

2. Facts Found and Analysis Results

2.1 Products

Since its foundation nearly 10 years ago, the company has continued to manufacture living room sets, sofas and two-seater love-seats of the same design. Two types of living room sets are manufactured, i.e. one which is upholstered all the way round and one which is an armchair made of exposed wooden armrests and back with a cushion to sit on. Other products include cabinets and dual-access cupboards (original products) using particle boards, hardboard or solid wood.

2.2 Machinery and Equipment

The minimum machinery and equipment are in place for the manufacture of sofas and wardrobes. Because of the long-term production of the same furniture, the machinery is efficiently used, making the best use of the accumulated experience.

2.3 Quality

The sofas are reasonable as medium-quality sofas while the quality of the wardrobes and other storage furniture is generally poor.

2.4 Point for Improvement

Although the quality of the sofas is fairly good, the lack of indoor storage means that finished products are left to scorch on the sandy ground outside. Direct sunlight on the wooden parts causes rapid drying, leading to cracks due to a decline of the moisture content.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
28th May, 1998	Bulawayo	Fur-11	Manager

Evaluation	Points *	
Technology	3	
Production Quality	3	
Profitability	4	
Marketing	4	
Labour	4	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 800,000 Sales : 1997 - Z\$ 3,031,030 Number of Employees : 40

2. Facts Found and Analysis Results

2.1 Products

The factory is divided into two divisions based on the product range. The main items are wardrobes. Another division manufactures chairs for restaurants and assembly halls, etc. These chairs have a pipes frame which is bent by a metal processing factor and a wooden seat (covered by cloth with a cushion inside) and back.

2.2 Machinery and Equipment

Although the number of machines, etc. appears rather small vis-a-vis the number of employees, the manufacture of box-type furniture using particle boards is assumed not to require an extensive range of machinery, etc.

2.3 Technology

Many buildings are located on the site. One rented building houses the factory in which the machine shop, assembly shop and painting room are located with little planning. The low prices of the manufactured furniture may well be the cause of the careless work but the level of skill is also inadequate.

2.4 Quality

When the wardrobe doors were opened, bent nails were found not to have been removed. The internal finishing was poor and the doors were not properly aligned. More careful work is required inside the products.

2.5 Future

As so hoped for by the company, the training of technicians and external advice are necessary.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
28th May, 1998	Bulawayo	Fur-12	Financial Controller

Evaluation	Points *	
Technology	4	
Production Quality	5	
Profitability	4	
Marketing	4	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 2,965,558 Sales : 1997 - Z\$ 3,023,935 Number of Employees : 55

2. Facts Found and Analysis Results

2.1 Products

Using domestically produced mkuwa (some 80%) and teak (some 20%), fairly high quality coffee tables and headboards (for beds) are manufactured. The same materials are used to manufacture wooden doors and window frames. The production emphasis has been shifting to doors in recent years, reaching almost 50% of the production volume. The annual turnover has rapidly increased in the last two years. The doors manufactured by this company are mainly used by hotels. The marketing area now covers entire Zimbabwe. Other types of hotel furniture are also manufactured in addition to doors.

2.2 Machinery and Equipment

Although the available machinery falls short of that required for the full-scale production of furniture, the recent shift to doors has led to a surplus capacity.

2.3 Technology

As both mkuwa and teak are hardwoods, it is more effective to concentrate on the quick manufacture of doors and window frames with a smaller number of processing stages

than standard furniture. The door and window frame market is, however, very competitive and this company is the only SME in the market, competing with three large enterprises.

2.4 Quality

Although the product quality is high, the minimum range of machinery means high dependence on manual work. Human wave tactics are literally used in the case of final sandpapering. As both mkuwa and teak are hardwoods, cutlery different from that used for softwood must be used for cutting and grinding. In addition, the cutlery must be replaced sooner than usual. It is difficult to produce a smooth finished surface, requiring fine sandpapering at the end of the manufacturing process. In this respect, the human wave tactics appear to be working well.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
29th May, 1998	Bulawayo	Fur-13	Production Manager

Evaluation	Points *	
Technology	3	
Production Quality	2	
Profitability	3	
Marketing	4	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 5 million Sales : Z\$ 7,684,000 Number of Employees : 92

2. Facts Found and Analysis Results

2.1 Products

Company is manufacturing various furniture products like wardrobe, kitchen-dresser, house hold furniture using particle board and hard board.

Products are distributed all over the country and no stock is kept in the factory.

2.2 Production

Manufacturing processes and methods are traditional method in Zimbabwe, but for cost saving purpose, thin particle board is applied in doors, which gave an impression of low grade furniture.

For the Kitchen-dresser, which is main products of this company, quality has not reached world-class.

For example, defects caused by sewing of particle board are mended by putty, and such defects are giving impression of lower grade furniture. Moreover, unnecessary mending work has led to poor productivity.

Such defects are chiefly caused by poor maintenance of edged tool and therefore we advised them to change and sharpen the edged tools regularly.

2.3 Quality

Quality of wardrobe seems to be average and can be considered as middle class quality products, but final finish, especially those area not seen from outside such as the inside of drawers, etc are very poor. Moreover, hardware like hooks, handles etc have not reached a required quality standard and this gave the impression that the products are not valued to its price of say Z\$1,800.

2.4 Machinery and Equipment

Due to the nature of work, the main job is cutting of particleboard and therefore, circular saw are widely used and factory facilities seem adequate.

2.5 Working Environment

Work environment seems to be maintained well, especially cleanliness and orderly environment which will eventually contribute to better productivity.

3. Advice

- 3.1 To minimize defects by sawing of particleboard, the blades of saws must be kept sharp always by regular maintenance by the technician.
- 3.2 Three dimensional assembly bench should be introduced.
- 3.3 Improvement of design and selection of material to meet design must be studied.

2.4 Quality

The lack of a basic woodworking machine means heavy dependence on manual work, resulting in inaccurate processing. The use of hard mkuwa and soft pine (which are two extremes in terms of wood hardness) makes it difficult to switch-over appropriate cutlery, resulting in a poor finish, such as imperfect joints.

2.5 Work Environment

The work environment is poor as half-finished products and repaired products are scattered around the factory together with chips of materials.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
2nd June, 1998	Kwekwe	Fur-15	Manager

Evaluation	Points *	
Technology	3	
Production Quality	2	
Profitability	3	
Marketing	3	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 300,000 Sales : Z\$ 700,000 Number of Employees : 19

2. Facts Found and Analysis Results

2.1 Products

The company manufactures wooden office furniture and products which are specially ordered by local consumers using mkuwa and pine. It has a welding division for metal processing and manufactures bus chairs with a metal pipe framework and a wooden seat and back.

2.2 Machinery and Equipment

Machines which are essential for the manufacture of furniture are absent. The lack of an automatic single-face planing machine makes it difficult to set up the work reference plane for components, resulting in poor production efficiency. The product quality is also affected.

2.3 Technology

Pine can be processed by the existing machinery but such hardwood as mkuwa requires the minimum range of appropriate machinery. The company appears to lack sufficient technical and planning ability to create value-added products using expensive materials.

2.4 Quality

The surface of the hardwood mkuwa products have a poor finish, presumably because of the inadequate sharpness of the cutlery used. The overall product quality is rather poor, illustrated by the inaccurate dimensions and loose joints, etc. The pine products are better made but the partial use of cracked wood necessitates filling using putty. As a result, the finish is always less than perfect.

2.5 Future

Efforts for future development can be seen in the design development and trial manufacture of deluxe office desks.

2.6 Advice

When such expensive materials as mkuwa are used, the employment of correspondingly high levels of technology, design and metalware, etc. is essential to add extra value to the products.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
3rd June, 1998	Gweru	Fur-16	Chief Executive

Evaluation	Points *	
Technology	3	
Production Quality	2	
Profitability	3	
Marketing	3	
Labour	3	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 395,000 Sales : N/A (new company) Number of Employees : 26 (13 in factory)

2. Facts Found and Analysis Results

2.1 Products

The company manufactures a wide range of furniture in response to orders placed by local consumers and furniture stores using pine (some 70% in volume), mkuwa (15%), salikuna (5%) and mahogany (5%). School furniture and furniture for public offices is also manufactured.

2.2 Machinery and Equipment

The machines used to produce furniture components are a circular sawing machine, hand feed planer and chamfering machine. Other small machines are incapable of manufacturing large furniture.

2.3 Technology

The inadequate range of furniture manufacturing machinery means heavy dependence on manual work. As a result, the reference dimensions for each component cannot be established, resulting in poor production efficiency and inadequate product quality.

2.4 Quality

Materials with cracks or scars should be either discarded or the defective sections should be removed. In reality, however, such materials are used without removal of the cracks or scars and defects of the finished products persist, reducing the product quality. This vicious cycle occurs when low product prices lead to the use of poor materials.

2.5 Advice

The materials must be strictly selected in order to avoid repair or readjustment at later stages. Joints must be properly made so that no gap can be observed.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
3rd June, 1998	Gweru	Fur-17	General Manager

Evaluation	Points *	
Technology	3	
Production Quality	3	
Profitability	4	
Marketing	4	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : N/A Sales : N/A Number of Employees : 200

2. Facts Found and Analysis Results

2.1 Products

This is one of approximately 10 companies in the country which employ some 200 workers each. While other large companies tend to manufacture high class furniture and/or furniture for export, this company mainly aims at the domestic market. The wide product range includes wardrobes, kitchen dressers, dining tables and chairs with metal legs, upholstered sofas and various wooden furniture for household use.

2.2 Machinery and Equipment

For a large factory, the present level of machinery is rather low. The main product range consists of box furniture using particle boards and hardboard and the overall availability of machinery appears sufficient despite a slight imbalance in that there are seven circular sawing machines.

2.3 Technology

The finishing of the sofas and beds is average. Such box furniture as wardrobes and kitchen dressers is not carefully manufactured, presumably because of the pressure to manufacture it quickly to compensate for the low prices. The technical level is not particularly brilliant.

2.4 Quality

The box furniture is assembled using panels which are nailed together. The nail positions appear to be arbitrarily selected and the binding strength appears inadequate. The machine cut ends and nail positions are filled with putty at the final finishing stage.

2.5 Work Environment

The introduction of a belt conveyor system may well be necessary to improve the production efficiency.

THE DIAGNOSTIC STUDY REPORT-WOODEN FURNITURE

- Date: 27, 28 July, 1998
- Company Code: Fur-17

1. Outline of Company

The size of the workforce is comparable to that of a large company. As the owner admits, the price and quality of the products are mid-range and production is geared to the domestic market rather than the export market. The products are mainly household furniture, including box furniture, upholstered sofas and inexpensive dining sets with the table legs and chair legs made of metal, complemented by a wooden table top, seat and back.

2. Exports

As it is believed that the domestic market will become increasingly competitive, the only scope for further business growth probably lies in breaking into the export market. For this purpose, it will be necessary to limit the product range in addition to technical improvement to improve and stabilise the product quality. The development of product designs suitable for the export market will also be required.

3. Production

The shopfloor workers are very busy, presumably because of the required speed of production. Despite such speed, however, the production efficiency is poor and the workers appear to lack the time to pay careful attention to product quality. The feeding of imperfect intermediate products to the next process causes readjustment and other unnecessary work. Such additional work adversely affects the productivity.

Review of the production method is required with a view to achieving more efficient production and improved as well as stable product quality. The recommended measures are the development of new tools, etc. so that work can be conducted in accordance with drawings and the prior planning of process coordination.

4. Quality

The causes of poor product quality include immature skill and the materials used. The selection of materials solely based on cost results in the purchase of inferior materials with

nodes and cracks, etc. The subsequent necessity to select usable materials is time-consuming and many of the original materials must be discarded, pushing up the unit component cost in some cases. Material defects may still remain and the product quality suffers.

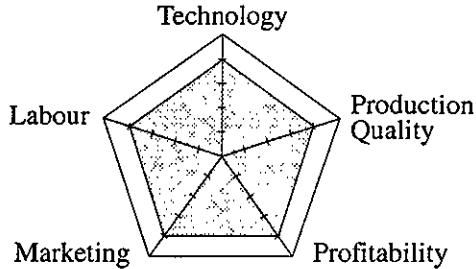
The same can be said in regard to particle boards. The treatment of defective cut ends at a later stage of production is both time and labour consuming. If the manufacture of export products is aimed at, three conditions, i.e. materials, processing technology (skills) and production equipment, must be reasonably met. These three conditions must be balanced to achieve any improvement of the present state of production.

Given the above-described situation, guidance was provided on the following points, some of which are also described in the improvement report.

- (1) Use of a ruler for the mounting of shelf struts and guide-rails for drawers
- (2) Tool manufacturing method to process side and top panels to the same width
- (3) Dimensional conditions in regard to the use of dowels
- (4) Preparation and use of a check sheet to record the causes of quality decline, such as material defects and processing errors, etc. and the remedial measures taken
- (5) Preparation and use of production manuals and introduction of production control techniques

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
5th June, 1998	Mutare	Fur-18	Director

Evaluation	Points *	
Technology	4	
Production Quality	4	
Profitability	4	
Marketing	4	
Labour	4	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : Z\$ 3 million Sales : 1995 - Z\$ 3 million Number of Employees : 70
1996 - Z\$ 6 million
1997 - Z\$ 12 million

2. Facts Found and Analysis Results

2.1 Products

The products are Western-style coffins using such high class materials as mkuwa and saliguna and less expensive particle boards.

2.2 Machinery and Equipment

The present level of machinery should be sufficient for the manufacture of coffins, the structure of which is simple. However, the use of hardwood means that it is difficult to produce a good surface finish. Given the importance of finishing work, the installation of the latest wide belt sander appears appropriate.

2.3 Technology

There are few technical difficulties in regard to the manufacture of coffins as the number of components is small and also as the manufacturing process is simple. Despite the simple product structure, there is no production flow on the factory floor and half-finished products are piled up in several places, reducing the space availability in the factory.

2.4 Quality

The binding at corners of the coffins poses a quality problem. Like most wooden furniture, gaps occur at the joints which are filled with putty.

2.5 Future

The procurement of a machine which glues a wood-grained sheet to a particle board or hardboard is planned for the manufacture of ceiling panels, room doors and doors for storage furniture. If the machine has surplus capacity, processed boards will be marketed as furniture materials.

FIELD SURVEY REPORT - FURNITURE

DATE	LOCATION	COMPANY CODE	INTERVIEWEE
5th June, 1998	Mutare	Fur-19	Director

Evaluation	Points *	
Technology	-	
Production Quality	-	
Profitability	-	
Marketing	-	
Labour	-	
	-	

(* 1 = Very Poor, 2 = Poor, 3 = Average, 4 = Good, 5 = Very Good)

1. Outline of Company

Capital : N/A Sales : N/A Number of Employees : 100

2. Facts Found and Analysis Results

2.1 Products

The company produces electric poles by soaking logs with a diameter of 20 - 25 cm in creosote in an autoclave.

2.2 Technology

The logs are placed in a creosote-filled autoclave of 5 kg/cm² and 80°C for some two hours and are dried in the factory yard.

2.3 Future

It is planned to procure a veneer production machine to produce pine veneer (0.4 - 0.6 mm thick) for export. Given the special nature of the business, no general evaluation was made.

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