TRAINING OF FOOTWEAR CLUSTERS: ON FOOTWEAR PRODUCTION BURUNDI

Training Report Produced by Simon J. Ng'ang'a and John Byabashaija

VENUE

Afritan Footwear Factory and Kamenge Federation Footwear Association - Bujumbura, Burundi

1. Introduction

COMESA/LLPI, in an effort to promote the Regional Leather industry, formed the RISP to take the Leather industry to the next level. This would give the participating countries a competitive edge both regionally and internationally out of the development of Leather processing and manufacturing techniques. This would be done through series of theoretical and practical training missions and direct revival of Leather processing assets (Factories and Tanneries). This training mission took place in Burundi and lasted two weeks commencing 09/12/2013. The contract was one of Short-term consultancy under the Regional Integration Support Programme (RISP2) between COMESA and Simon Ng'ang'a. The Programme was undertaken dually with Mr. Ng'ang'a training from the theoretical aspect and Mr. John Byabashajia training from the practical aspect. The training took place at both the Afritan Footwear Factory and also the Kamenge Federation Footwear Association. In total, 52 participants were trained.

2. Overall Objectives

The Programme was aimed at reviving the huge potential factory that is Afritan Footwear Factory (Burundi), hopefully reaching levels of production of between 1000-1500 pairs of shoes per day and employing about 300 people. Kamenge Footwear cluster is specializing in the production of ladies sandles, which has a huge market in Burundi and the rest of the region. The sandles also has the potential of being export to markets abroad, targeting the ethical fashion houses.

3.0 Trainees

Trainees at Afritan Footwear Factory

1- Bukeneyeza Diedonne
2- Havyarimana Emile
3- Havyarimana Sylvene
4- Ikitaralenga Clodo
5- Iradukunda Sixte
6- Kamakazi Ghistaine
7- Kankindi Marie Anitha
8- Kanyamuneza Beatrice
9- Kanziza Alida Pamella
10- Mpawenimana Charlotte
11- Mpitabakana Richard
12- Munyana Eliane
13- Musavyi yvone
14- Ndayisenga Adeline
15- Ndayishimiye Claire
16- Nduwimana Benjamin
17- Nimumbona Alexis
18- Nininahazwe Sophie
19- Niyonkuru Beatrice
20- Niyonkuru Egide
21- Niyonkuru Jean Claude
22- Niyonzima Alice
23- Niziyimana Dieudonne
24- Tatu Sanura
25- Niyokwizera Diane
26- Ntakarutimana Sp'es
27- Ciza Ubenz Ibraim
28- Nsabimana Amiri
29- Nininahazwe Evelyne

Trainees at Kamenge Federation Footwear Association;

1- Ge'de'on King Nduwimana
2- Bitegetsinana Frederic
3- Nisebariko Junaine

4- Niyomburu J. Cloude
5- Bucuni
6- Mpawenayo Shabani
7- Kibwimana Samuel
8- Bambarauko Ntari Emanuel
9- Nduwimana Claude
10- Irakoze Didier
11- Habimana ZeZephirin
12- Mbonimpa Anne
13- Ndayizeye Erartim
14- Bankuwengura Dismas
15- Congera
16- Diev Donne
17- Ndeyisenga Diudonne
18- Dereyimana J Claude
19- Ndikumana Desire
20- Manirakiza Augustin
21- Irakunda Sixte
22- Ntibarusiginyuma Augustin
23- Bukuru Gaspard

4.0 Training Duties

On theoretical perspective, the training focused on the following areas;

- Material Selection leather versus synthetic
- Property of Leather
- Type of glue and their application
- Material Costing
- Basic pattern making
- Cutting skills
- Skiving skills
- Preparation and assembly skills
- Stitch formation know-how and type of stitching needles
- Stitching skills
- Lasting
- Type of sole material and bottom preparation
- Finishing
- Quality control
- Labeling and packing
- Other duties

4.1 Material Selection Leather versus Synthetic

Leather is a unique natural material with very special qualities. The students were taught how to differentiate leather from other man made materials. The best and simplest test method would be a

fire flame. Expose leather to a burning flame and the leather shines and appears smoother while other materials would either blister or burn.
All man made materials are uniform in structure and form uniform patterns , colours and consistency in appearance while leather is different from skin to skin.

Sorting Leather before cutting

- Texture: - This will be determined by feel and dictated by the tightness of the fibre structure
- Color: - Color on each piece of leather varies even with similar tanning from skin to skin. This variation is caused by difference in dye absorption by the loose parts and those of lighter grain in drum dyeing. However, this variation can be minimized with spray dye. As we know, no two pieces of leather will be identical, tanners try their best to maintain consistency but sorting is a necessary exercise.
- Defects and marks such as those resulting from flaying, tick marks, loose grain, hardness help in determining the overall value and the grade of each skin.

4.2 Properties of Leather (Cow or Bovine) – Elasticity, Tightness, Water permeability, air conditioning

Leather is a special natural material with various properties and uses and each piece of leather is different from the other and also from animal to animal. Leather defines itself in various parts depending mostly on its fibre differentiation;

- **Butt:** - The best portion with full substance and very tight grain and uniformity. The prime or important parts of a shoe upper are usually cut form the Butt; vamps, fore parts, toe caps or any parts that will be put to high strain and wear. Leather soles are also made from the Butt
- **Middle Shoulder:** - Not as good as the Butt but better than the belly. The grain is uniform and compact but thinner. The vamp may also be cut form the shoulder
- **Neck:** - It is accepted for cutting quarters and heel covers and straps etc. The grain is uniform and compact with visible growth marks.
- **Belly:** - This is stretchy and loose with grains more open. It is thin. Vamps, quarters and all other parts can be cut from the belly
- **Shank:** - This is very stretchy and weak with open and irregular grains. This part will be good only for tongue, back straps and underlays.
- **Tension and Stretch:** - This will depend on the growth of the animal while alive, the type of animal, the tanning chemicals used for finishing. The greatest amount of stretch will be near the legs, the belly and across the neck. All animals /skins will be consistent in their direction of stress and tightness.

4.3 Type of Glue and Application

The types of glue to be used will vary from product to product

- Tough Bond or Latex is used for Lasting or temporary attachments
- Bostic/ PVC/ or white glue for PVC sole to leather uppers
- Neopren : Is a petrol based glue used for rubber soles to leather uppers or leather to leather

4.4 Material Costing

After designing and making patterns, all upper parts and linings must be made in a way so as to avoid waste and must be measured very accurately. The most effective and economical way is the closest interlocking of patterns and measurements for each pattern calculated for inclusion and all values added together to determine leather requirement per pair. This will also apply to the bottoms like insoles, shank boards, counters, toe puffs etc.

Everything else that goes into making the shoe must be costed; vamps, vamp linings, quarters, quarter liings, back straps, straps, under eyelets, soles, shanks, adhesives, elastics, zips, buckles, rivets, eyelets, sewing thread, packaging materials, direct labour, direct and indirect overheads, power, water, communication, transport, rent, sales among other expenses. After this is done, add the profit margin/ mark up/ pricelist according to market rates.

The cost for uppers which is the highest of all footwear will be determined by waste from interlocking of patterns and waste from irregularity of leather given the different patterns like vamps and quarters and also by the grades in leather. The upper part of the shoe carries the highest cost of a shoe.

4.5 Basic Pattern Making

This starts by covering all parts that need to be made with a masking tape eg uppers on which to draw patterns like vamps, quarters, linings, counters, insoles, straps according to the designer and giving allowances for all parts to allow stitches, overlays and lasting

4.6 Cutting Skills

Various cutting skills will be used from hand cutting (using knives or scissors) or die cutting by machine. Machine cutting or clicking is the most effective and accurate but this will depend on production levels

4.7 Skiving

This is completely unavoidable in shoe making. It is the reduction of thickness of certain edges of shoe components to enable various treatments of same edges. Skiving improves the general appearance of the shoe. It provides comfort in wear and helps basic constriction of the upper. Skiving is done mostly on both sides of the component. Different types of skiving are raw-edge, folded-edge, lapped skives, lasting or corner skives.

4.8 Preparation and Assembly

Before closing or stitching, preparation will include skiving, splitting of uneven components, edge treatments, raw edge, folding, burnishing, binding, French binding, reinforcements. etc
Stitching preparation- sewing machines function classification, types of seams, closed or open, lapped, butted, piped etc . Major operations include joining quarters, edge stitching or treatment, vamping, decoration stitching, elastic or zip fitting among many other operations

4.9 Stitch Formation

The mostly used types of stitches will be lock-stitch, chain-stitch which will determine the classifying or selection of needles

4.10 Stitching Skills

Stitching, sewing or closing is the operations of joining parts with machine, needle and thread. (Hand stitching is also done for various operations). Machines must be classified for all stitching requirements. The difference will be found on the type of operation and skill of operation.

Beginners start with simple stitching and progress with gaining experience till they can perform skilled operations like vamping, edge stitching, and top-line stitching among others. In stitching, they will do seams like closed seams, open seams, silked seams, lapped seams, piped seams, moccasin seams etc

4.11 Lasting

Lasting is the complete operation of covering the whole last with the finished upper part of the shoe using glues or tacks for attaching or lasting. The upper is lasted from toe to the seat including sides.
This can be done using machines. Hand lasting is also done depending on production requirements and set ups.

4.12 Type of Sole material and Bottom Preparation

Types of soles used in footwear production include leather soles, unit rubber soles, vulcanized rubber soles, P.V.C. unit soles. P.V.C. injected soles, PU soles (Poly Urethane) TPR soles, (Thermo Plastic Rubber), TPU (Thermo Plastic Urethane), EVA, Micro sheets, Neolite soling sheets among many others.

Bottom preparation will include roughing or removing the grain side of the lasted upper, dusting off, cementing the lasted margin. Sole preparation depends on the type of the sole to be used, sole cementing, cement drying and activation, sole attaching and pressing

4.13 Finishing

After out- lasting, finishing is done. This is a series of activities that start with the cleaning and dusting off the shoe, cleaning any cement that may be jutting out between the lasted shoe and the sole; Pigmenting to cover any flesh parts. This is followed by spray or sponge finishing using appropriate finishes as required. A heel pad or a full sock is then fitted.

4.14 Quality Control

Quality of each footwear is built into the product from the start up to the finish. This starts by quality control checking of the leather to be used, during the cutting or clicking, checking of clicked or cut components before sewing is done and at the end of the sewing line. At the assembly point, the parts to be assembled are also checked for quality and this goes on till the shoe is finished. The final quality check is done before labeling and packing.

4.15 Labeling and Packing

Every shoe coming out of the production line should have a label bearing the name of the producer/manufacturer, the company's logo, and, in most cases the size of the footwear. This is one of the best selling points of any pair.

4.16 Other duties – Training at Kamenge

There was yet another training session at Kamenge and as the Chair of the SME's I had the opportunity to meet with this group and had discussions on ways and means of improving the products, improving their market access and becoming employers instead of doing other jobs

themselves. I also encouraged them to forge a cohesive leather cluster and include many others in the production of leather articles.

5.0 Observations

1. The Afritan Footwear Factory is a very well equipped footwear manufacturing plant with various modern machinery that remains unused.
2. The two- week training is but a drop in the ocean as far as training needs, expertise and skills building are required.

6.0 Recommendations and Conclusion

The following are recommendations for Afritan Footwear Factory. These were also discussed with the Factory proprietor..

EQUIPMENT

1 . Plastic hinged lasts _Three to four or five (3,4,5) shapes of 100 to 150 pairs per shape would be ideal,

Men's last, sizes 6 -11 – 6-10, 7/25, 8/40, 9/40,10 /25, 11/10 TOTAL 150 Prs.

Ladies Sandals – 2-8, one shape, mostly without a hinge, 2/10 3/15 4/25 5/30 6/30 7/20 8/20 -

Children 8/10 9/15 10/15 11/20 12/20 13/20 1/20 2/20 3/2 04/30 5/30 6/20 7/2 8/40 9/40 10/20 11/10,

2. Lasting stands (jacks) three to four

3. Scissors two dozen 4 inches, 2 dozen 6 inches one dozen 12 inches and three dozen clippers

4; Lasting pliers one dozen

5. Hand clicking knives - specify type then make machine cutting dies for large production and fast moving designs

6. Cutting tables three pieces

7. Sharpening stones

8; Shoemaking hammers two dozen

9. Punches of various types; 2mm, 3mm, 4mm and 5mm; awls one dozen

10. Working Benches (Tables) for preparing Sewing work, sorting leather and for quality control, finished shoes and for packing and tools or chairs;

11; Thickness gauges about one dozen

12 Cementing brushes few dozen; for stocks to use as required;

WORKING MATERIALS

1 Leather and leather linings
2 Soles about I,000 pairs per last
3 Bottoms, Texon about 500 pieces(insole boards, Protoflex -(stiffener) 3 rolls
4 Metal Shanks
5 Sewing threads
6 Sewing needles
7 Eyelets and laces
8 Elastics
9 Zips
10 Bindings
11 Moccasin stitching threads
12 Chemicals like MEK (Methy Elthyl Keton) or Toluene
13 Glues, Tough bond or latex, Bostic PVC or WHITE GLUE
14 Store for materials and separate store for chemicals on the outside to avoid fires etc
15 Scouring wheels and sand paper (Emery paper)
16 Heating elements

MACHINERY

1. Grading machine
2. Cold steel knives making section (Complete)
3. Hot air blowers for ironing wrinkles
4. Stamping machine or numbering machine

5. Spray finishing booth with extractor
6. **If necessary, injection machines or Direct Vulcanization process for children shoes**

PERSONNEL

1. Creative /Technical Designer with two or three sample makers as a Department; Later to become the Product Development Department
2. Supervisors for Cutting, sewing and Assembly Departments
3. Overall Production Manager to co ordinate all Departments and for all production Planning
4. Some few people as key operators one or two per section to stand in or help the supervisor in times of sickness, absenteeism or any emergencies
5. Sales and Marketing Personnel with a Sales Manager to finally form the Sales and Marketing Department
6. Maintenance personnel for sewing machines; mechanical machines, pneumatics and Hydraulics which will form the Engineering Department

OTHER CONSIDERATIONS FOR FUTURE OR IMMEDIATE DEVELOPMENT OR ADDITION

Due to the existing dynamics in footwear production sales and marketing; The purchasing power of the local people and the infiltration of cheap imports from all over, it will be wise and very prudent to invest in the production of low priced and pocket friendly footwear for all; For this we suggest the making of Sandaks for men, women, and children including Bubble Gummers for toddlers

Bath room slippers, Gum boots and shoes made from other synthetic materials and fabrics like canvas shoes for women would be very ideal;