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HRD Management in Indian Tanning Industry

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Abstract: Tanning is the process by which raw animal skins and hides (bigger ones) are converted into leather. Performing various steps of pre tanning, tanning and post-tanning operations are highly involved in the environmental pollution to the surrounding areas. The tanning industry provides direct employment to more than 1.10 million people from socially and economically backward and minority communities. Tanning is the supplier to many leather products industries like footwear, shoe uppers, leather garments, leather goods, gloves and upholstery. Exports, domestic markets and environmental factors are the factors for expansion of tanning industry and creation of employment opportunities in this sector. This case study reveals the production of hides and skins, structure of industry, exports growth, global imports and estimates of Human Resources future requirements in tanning industry in India.

Keywords: Indian Tanning Industry, HRD in Indian Tanning Industry, HRD for tanning , tanning industry, leather industry, exports of leather

I. INTRODUCTION

In tanning process, the leather is made resistant to biological decay by stabilizing the collagen structure of the skin/hide, using natural or synthetic chemicals. Tanning process involves a sequence of chemical reactions and mechanical processes. Performing various steps of pre and post-treatment, generates a final product with specific properties: stability, appearance, water resistance, temperature resistance, elasticity and permeability for perspiration and air, etc. The Indian tanning industry has a distinct advantage of abundant availability of livestock with the largest share in world's livestock population (20% of world cattle & buffalo and 17% of world goat & 7% sheep population), the tapped potential in the leather sector particularly in the high end value chain is still limited. This untapped potential provides the sector significant opportunities for expansion, modernization and diversification.

Table No. 1 - LIVESTOCK AND PRODUCTION OF HIDES & SKINS, DETAILS OF INDIA AND WORLD – 2012 [1]

Description	India	World	% Share
No. of Bovine animals (in million heads)	325.826	1632.921	19.95
No. of Sheeps and Lambs (in million heads)	75.979	1088.866	6.98
No. of Goats and Kids (in million heads)	158.287	913.999	17.32
Production of bovine hides & Skin (million PCs)	43.1	355.2	12.13
Production of sheep skins & lamb skins (million PCs)	37.0	531.5	6.96
Production of Goat skins and kids skins (million PCs)	88.9	475.8	18.68

Sixty percent of slaughter happened in urban abattoirs and nearly six lakh villages slaughter accounts only 40% since it is not organized. Eleven million pieces of hides from fallen animals are not recovered due to non-availability of skilled flayers.

II. PROBLEM STATEMENT

Indian tanning industry is providing employment opportunities to India. This industry is labour intensive especially for unskilled persons and it is raw material supplier/provider to the leather products industries. There is a need to look into this industry and its potential for creation of more employment opportunities to the nation. Leather products industries and its growth are more dependent on this industry potential and expansion. Industry, Government, Educational Institutions, Industry Associations would look into further investments in this industry and its management of HRD for future years. Thus Effective HRD management is required to give an idea for overall development of Industry.

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III RESEARCH METHODOLOGY

This study is in terms of purpose is an applied and is type of descriptive- analytical and in terms of data collection is library method and data gathering tools in this study is through websites, internet. Analysis on exports growth, global markets, present employment, employment required per unit and further estimates human resources requirements for future years based on the growth of exports and domestic markets.

Tanning Process: The process involves many stages, viz: the first stage is the preparation for tanning i.e. beam-house operations like remove salts from skins and cleaning, soaking for removing dirt & unwanted material, liming the skin to swell to ease for removing hair & excess flesh from the skin and later de-liming for making leather to normal condition, pickling process to make leather to get suitable pH value and ready to second stage. The second stage is the actual tanning like vegetable tanning (negligible) or chemical tanning. In Post tanning operations like Sammying, Splitting, Shaving & Trimming, Re-chroming /Semi-chroming, Neutralization, dyeing, Fat-liquoring and finishing would be done after tanning process. The third stage is known as re-tanning, applying re-tanning agents and dyes to the material to provide the physical strength and properties desired depending on the end product. The fourth and final stage, known as finishing, is used to apply finishing material to the surface or finish the surface without the application of any chemicals if so desired.

Tannery sector is that the vital contributor to the domestic and export markets and provides massive scale employment chance for people of economically weaker section of society in Indian economy. Ninety three percent of the tanneries are in organized sector and come under Small Scale Sector. Besides being necessary from economic and employment generation point of view, the tanning sector is also very important in the point of environmental protection. Because of preservation and process of raw hides and skins cause severe pollution problem.

The Tanning sector in India is well developed due to robust R&D base, advanced technology and trained workforce. The distinctive facet is that it turns out very best quality leathers from comparatively low quality hides. India annually produces around one hundred eighty million sq. meters of leather that accounts 10% of worldwide production. Goat and buffalo based leathers are India's major strength. Major tanning centers in India are shown below. Out of 2500 tanneries in India, Tamil Nadu accounts for 50%, West Bengal 20% and U.P. 15%.

Major tanning centers in India

- 1 Tamil Nadu - Chennai, Ambur, Ranipet, Vaniyambadi, Erode, Trichy and Dindigul
- 2 Andhra Pradesh – Hyderabad, Warangal, Vijayanagaram
- 3 Karnataka - Bangalore
- 4 Punjab - Jalandhar
- 6 West Bengal - Kolkata
- 7 Uttar Pradesh - Kanpur, Unnao and Agra

Indian Tanning Sector has the annual production of 2 billion Sq.ft. and it accounts for 10% of world leather requirement. Total tanning capacity in India is nearly seven thousand tonnes and major percentage of industry is concentrated in cottage and small scale sector or even households. That is why the tanning industry is not able to adopt latest machineries, technologies for the improvement of process of leather except a few units in large scale sector.

The state of Tamil Nadu occupies more than 60 per cent of the tanning process in the country with tanners from the state sourcing the bulk of their raw material from other states. Tamil Nadu tanners have agents in different parts of the country.

Major Markets of Hides and Skins

Major markets for hides and skins are Vijayanagaram (Andhra Pradesh), Guwahati (Assam), Darbhanga (Bihar), Jabalpore (Chattisgarh), Ahmedabad, J unegadh, Rajkot and Bahraich (Gujarat), Srinagar and Jammu (Jammu and Kashmir), Trivandrum, Thrissur, Cochin and Calicut, Ernakulam (Kerala), Bhopal, Indore and Gwalior (Madhya

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Pradesh), Mumbai and Sholapur (Maharashtra), Jaipur (Rajasthan), Trichy, Pollachi, Erode and Chennai (Tamil Nadu), Kanpur and Hapur (Uttar Pradesh), Kolkata (West Bengal) and Delhi.

Large traders have always their own agents in small feeder towns and villages. These agents receive hides and skins from villages either through their sub-agents or directly from butchers in slaughterhouses. Advance payments to butchers prevail to get skins in-time. Sometimes animal owners from villages transport the hides and skins directly to weekly markets from where agents of large traders procure them. Procurement of hides/skins takes 7 to 21 days to reach the tannery after the animal has been skinned.

Structure of Indian Leather Industry [2]

The industry is dominated by micro and small units mostly family oriented, with bigger units accounting for just around 5 per cent of the total manufacturing units. The following table shows the distribution of the units in leather industry in different segments in terms of the broad classification of MSME and others is indicated below:

Table No. 2 -Structure of Indian Leather Industry

Units (in Numbers)	Large	Medium	Small	Micro	Merchant	Total
Finished leather	30	49	309	68	151	607

EXPORTS PERFORMANCE OF INDIAN LEATHER INDUSTRY (Leather and Leather Products Industries)

Based on the monthly export data revealed by Directorate General of Commercial Intelligence & Statistics (DGCI&S), the export of Leather and Leather products for the financial years for 2011-12 (April-March) and 2012-13 (April-March) has given in the Table below. In the year of 2012-13, exports have touched US\$ 4996.91 million as against the performance of US\$ 4873.53 million in the corresponding period of last year of 2011-12, recording a positive growth of 2.53%. [3]

Table No. 3 - EXPORTS FROM INDIAN LEATHER INDUSTRY (2011-12 & 2012-13 AND 2013 Latest)

CATEGORY	2011-12	2012-13	% VARIATION	2012	2013	% VARIATION
	APR-MAR	APR-MAR		APR-SEP	APR-SEP	
FINISHED LEATHER	1024.69	1090.22	6.40%	562.75	626.66	11.36%
TOTAL	4873.53	4996.91	2.53%	2486.11	2851.20	14.69%

Process of tanning : The process of converting raw hides and skins into leather is called tanning. The operations falling in pre-tanning, tanning and post-tanning operations are depicted in the figure 1 below:

Recent scenario : Globally, there were major structural changes in this sector—the manufacture of leather and leather products such as shoes, garments and other as sorted goods migrated from industrialized countries in the West to the developing countries of the East in a big way, primarily motivated by environmental pollution reasons and cost considerations. The differences in wages were too vast to be bridged by any technological improvements, mainly because the leather industry is labour-intensive.

Strong infrastructures are in place for the leather tanning in the country. Eco-sustainable tanning processes are being followed in the tanning industry. The tanning industry is well supported by the presence of chemicals and auxiliaries industry. Colours presented by the Indian tanners are selected continuously in MODEUROP congress, France, and hence the advantage of forecasting colours has taken by industry well in advance two to three seasons before for exploring opportunities to export fashionable leathers abroad. It reinforces the quality of leather processing techniques into colour fashions and finds a place in global fashion markets

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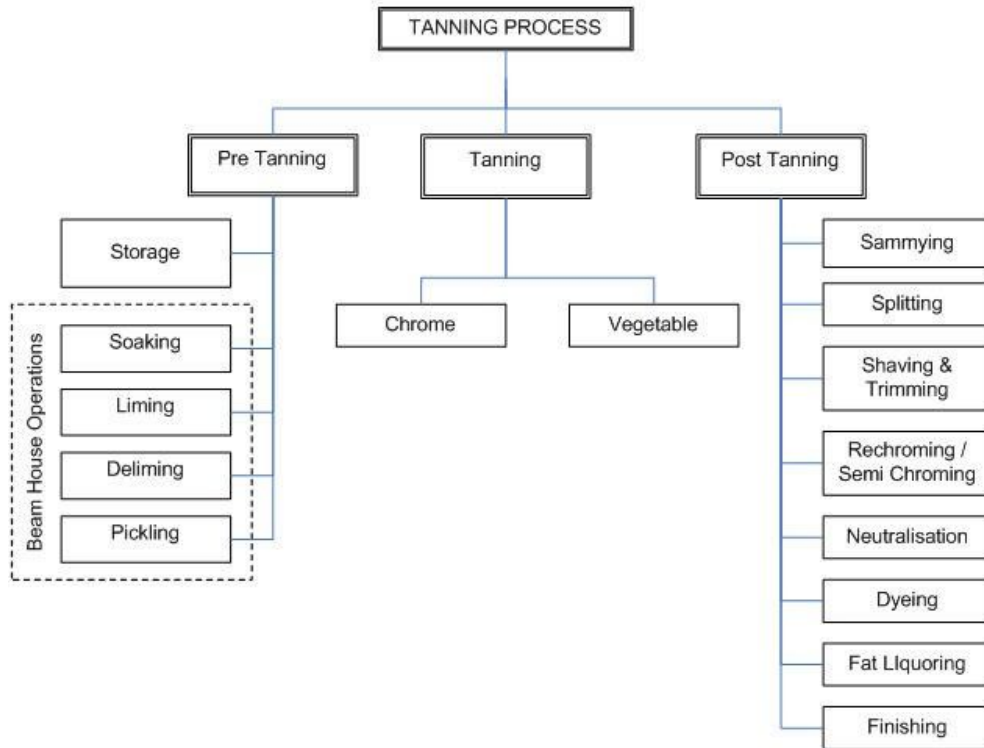


Figure 1 : Tanning Process

Export of Finished Leather and Its share in Indian Leather Industry : The following Table explains the share of export of finished leather in the total leather industry exports. Even though there is no big difference in last three years, the share has decreased from 2008-09 and 2009-10 onwards due to policy initiatives by Government of India to encourage more export of value added leather products from India.

Table No. 4 - **India's export of leather and leather products for Five years (Value in Million US\$)**

	2008-09	2009-10	2010-11	2011-12	2012-13
Finished Leather	673.37	627.95	841.13	1024.69	1090.22
Total leather and leather products	3599.46	3404.57	3968.54	4873.53	4996.91
Finished leather share in total exports	5.35%	5.42%	4.72%	4.76%	4.58%

Global imports of finished leather has been decreased some extent but Indian exports share in global imports has increased consistently over the years. The following Table shows the figures of global import of finished leather viz-a-vis India's export and share during 2007 to 2011: [4]

Table No. 5 - **India's Share in Global Imports of Finished Leather (Value in Million US\$)**

	2007	2008	2009	2010	2011
WORLD IMPORT	23120.97	21347.76	14907.56	19742.52	22151.29
INDIA'S EXPORT	807.19	673.37	627.95	841.13	1024.69
% SHARE OF INDIA	3.49%	3.15%	4.21%	4.26%	4.63%

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The Global import of Finished Leather declined from US\$ 23120.97 million in 2007 to US\$ 22151.29 million in 2011. India accounts for a share of 4.63% in 2011 in the global finished leather imports from 3.49% in 2007. India's export of finished leather touched US\$ 1090.22 million in 2012-13, holding a share of 21.82% in India's total export of US\$ 4996.91 mn. The major markets for Indian Finished Leather are Hong Kong 37.84%, Italy 13.50%, China 9.06%, Korea Rep 3.90%, Indonesia 2.30%, Spain 2.56% and Germany 2.53%.

IV. MANAGEMENT OF HUMAN RESOURCES REQUIREMENTS FOR INDIAN TANNING INDUSTRY

Employment :The finished leather industry is an employment intensive sector, providing jobs nearly about 1.10 million people, mostly from the weaker and minority sections of the society. Many estimates are available on workforce on leather industry, but experts in the industry accepted the following figures in the Twelfth Five Year Plan period 2012-17. The estimated employment in different sectors of leather industry is as follows: [2]

Table No.6 - *Employment in Various Segments in Leather Industry*

Industry segment	Workforce (All over India) in million	Percentage of Total
Flaying, curing, handling & transport, etc., of raw material - (Self employment)	1.00	40%
Tanning and finishing (organised)	0.10	4%
Total leather and leather product industries	2.50	100%

In general, estimates are available and persons required for different capacities per day in leather processing industry for hides and skins separately. Different categories are required for the manufacturing of leather in a tannery unit.

Table No. 7 - **EMPLOYMENT REQUIRED PER UNIT IN LEATHER PROCESSING INDUSTRY**

Category	Hides 250 PCs i.e. 500 Sqft/Day	Skins 2000 PCs i.e. 8000 Sgft/Day
Production Manager	1	1
Supervisor	3	3
Shop floor Workers	50	50
Machine Maintenance Personnel	4	4
Lab Analyst/Chemist	1	1

In the tanning industry, various activities are undertaken for manufacturing the leather and percentage of activity has given in the below table. Nearly 89-90 percent activity goes to manufacturing/production activity and followed by other activities. [5]

Table No. 8 **Distribution of human resource across various functions in finished leather segment**

Function	Percentage of People
Manufacturing/Production	80-90%
Sales and Procurement	2-3%
Finance, HR, Administration, etc	10-12%
Total	100%

In the tanning industry, pre-tanning, tanning and post-tanning activities will be undertaken for manufacturing leather. Pre-tanning and tanning activities would take 15-20% and post tanning would take 60-65% in the manufacturing and production activity of leather.

Table No.9 - **Distribution of human resource across various manufacturing activities in finished leather segment**

Stage	Functions	Percentage of People
Pre Tanning	Soaking, Liming, Deliming	15-20%
Tanning	Tanning	15-20%
Post Tanning	Adjusting thickness, dyeing, softness, buffing, finishing	60-65%

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EDUCATION AND TRAINING - Current employment and training pattern in finished leather segment

As can be seen from the above table the majority of the people employed in the finished leather segment are in the class 12th /10th & below category. Some of the activities where these people are employed, such as shaving, splitting, spraying, buffing, etc., are highly mechanised but there is lack of training institutes/centres to train people to work on such machines. As a result, industry employs unskilled workers and trains them on the job and with experience they become skilled workers. It takes from few months to few years, depending on the complexity of the task, for converting these unskilled workers into skilled workforce. Another major problem area for tanneries is related to shortage of technicians (leather technologists, diploma holders, and engineers) who are in-charge of activities wherever chemical applications are used and also supervise overall production process. These problems are discussed in detail in the later sections

There are five institutions in India which produce 150 B.Tech. / M.Tech. (Leather Technology) graduates per year to serve at the managerial level in the finished leather segment. Followed by this, another eight institutions of different State Governments annually turn out around 250 Diploma Holders to serve as Supervisors. The recently started National Institutes of Fashion Technology (NIFT) located in Chennai, Delhi and Kolkata supply nearly 100 Fashion Technologists/Designers to work at the Managerial level. But none of the institutions offer training to the shop floor level workers and machine operators who form the bulk of the workers participation.

The below table shows that only unskilled labour occupied 90-95% in the manufacture/ production activity of leather. These persons are trained in tannery itself by experience and there is no specific training programmes for these people. There is a shortage of B.Tech leather graduates since they are going to IT sector for better salaries. Tanning industry is paying very low to these graduates and hence these graduates are try to do some entrepreneurial works to get profits instead of salaries out of their tanning job works.

Table No 10 - Distribution of human resource by education level in finished leather segment

Education Level	Percentage of People	Role in the organization
CA, MBA and Other Graduates	1-2%	Management, Marketing, Accounts, Planning, Assistants in various departments, rising up to Department Head level overtime with experience
Engineers, Diploma or equivalent certification	2-3%	Marketing, Merchandising, Product Development and Engineering, Designing & Sampling, Production Planning
ITI and other vocational courses	1-2%	Production supervisors, Maintenance supervisor, Store manager
Class 12 th /10 th & below	90-95%	Line in-charge, Machine Maintenance Operators, assistants, helpers
Total	100%	

Based on the export target set by the Government of India, expansion of industry and its production capacities, a study has been conducted for human resource and skill requirements in leather and leather goods industry by National Skills Development Corporation, New Delhi (NSDC). NSDC engaged IMaCS (ICRAManagement Consulting Services Limited) to prepare the report, which is based on independent research and analysis done by IMaCS. Projection of HRD requirements for tanning industry has given by IMaCS. Taking the export growth of 12% CAGR (Compound Annual Growth Rate) and domestic market growth of 8% CAGR, projections have been prepared upto 2022 year.

Table No.11- Human resource required by the exports segment in leather sector by 2011 (in '000s)

Product	Human resource / unit of production	Human resource requirement
Finished leather	500 persons / million sq. ft	1000

HRD REQUIREMENTS

ICRA Management Consulting Services Limited (IMaCS) analysis estimates the requirements of human resources for each segment of leather industry. Below table shows the estimates for different years.

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Table No.12 - Human resource requirement in the finished leather industry between 2008 and 2022 (in '000s)

Year	2008	2012	2018	2022	Incremental
Flaying and Curing	1000	1302	2122	2856	1856
Tanning and Finishing	100	142	212	286	186
Total Tanning Industry	1100	1444	2334	3142	2042

V.CONCLUSION

Employment opportunities creation is very important to any nation like India. Being a labour intensive industry, its contribution to employment as well as Indian economy is significant. It has potential to provide employment across all sections of the economy especially weaker sections and minority communities in India. Tanning industry is backbone for other leather products industries and it is essential to manage HRD requirements from time to time. Tanning industry is facing many setbacks and environmental and pollution problems and hence it needs more qualified human resources to tackle these problem in future. Associations with educational institutions should take active part to give proper training to unskilled labour for managing these problems effectively. Government should take more attention on tanning industry to create more awareness on environmental problems in the industry and should give policy support and proper training to fill the gaps of human resources for the development of this industry. Otherwise tanning industry will face many problems and loose many jobs for weaker section and minority sections of the society. With a focused approach on growing the Industrial and Institutional business, the industry can offer globally renowned quality leathers. Quality consciousness, research & development, abundance of livestock, export potential and low cost are some of the distinct features of the Indian tanning Industry. However, to maintain the growth trajectory, there is need of a purposeful review of programmes and policies of human resources development from time to time to rejuvenate it.

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REFERENCES

- [1] World Statistical Compendium for raw hides and skins, leather and leather footwear 1993-2012, Estimates by FAO of United Nations
- [2] Council for Leather Exports, Chennai
- [3] Directorate General of Commercial Intelligence & Statistics, Kolkata
- [4] International Trade Centre, Geneva <http://www.intracen.org>
- [5] Primary Research and IMaCS analysis
- [6] National Skills Development Corporation, New Delhi