Need For High-level Technology For Indian Leather Industry

By

N LAKSHMINARAYANAN, M S OLIVANNAN, J B RAO

and

DR M SANTAPPA,

Central Leather Research Institute, Madras 20.

TECHNICAL manpower is essential for sustaining and developing technology and for ensuring transfer of technology to suit the varying needs of the leather industry. Leather is traded the world over with the main centres of consumption in the advanced countries of Europe and America. Along with the growth of the chemical industry, the Western world has been introducing newer products and techniques to make leather more attractive, durable and amenable for the manufacture of many end products, notable among them being footwear and garments. India is to face the sophisticated technology of the West in marketing leather and its products and hence continued improvement in the quality of technical manpower is essential.

INDIA'S POSITION IN WORLD LEATHER RESOURCES

As against this position in the raw resources, India's share in world trade was estimated at 1.3% in respect of hides and skins, 17.6% in the case of leathers and 0.8% in respect of footwear with leather uppers.

In a recent F.A.O. report, the total value of international trade in hides and skins (excluding furs) and the intermediate end products made from them has been estimated at U.S. $ 4,000 million (Rs. 3,600 crores) in 1974. India's share in the world trade, which works out to 5.23%, is far below the resources.

(in millions)

	Population			Year 1971	
	World	India	%	Hides & Skins World	India
Cattle	1153	231	20.03	239	31
Goats	337	70	20.77	129	40
Sheep	1032	45		22	6

PATTERN OF INDIA'S EXPORT OF LEATHER AND LEATHER PRODUCTS

Percentage Share Of Various Items

	1961-62	1968-69	1972-73	1973-74
a) Raw Skins	24.4	6.1	0.4	0.8
b) Semi-tanned leathers	65.3	85.4	82.8	80.2
c) Finished leather	4.8	1.9	9.3	9.1
d) Leather manufactures including footwear	5.5	9.6	7.5	9.9
	100.0	100.0	100.0	100.0

In the total exports, the share of finished leather and leather products was 19% in 1973-74, but as much as 81% was still accounted for by semi-processed leathers.

The developing countries, which have a share of more than 60% of the hides, 21% of goat skins and 6.5 of sheep skins of the world, account for only 1.3% in the global trade in footwear, the major ultimate product from leather.

These data and details emphasize the fact that the developing countries in general and India in particular have to go a long way to achieve a breakthrough in the export pattern with a higher content of processed products. The world demand for finished leathers and footwear will increase substantially in the next two decades and with the mounting constraints in the production sphere in the West, the centres of production and trade are bound to shift to the developing countries. For instance, it is estimated that by the end of this century about 14,000 million pairs of footwear will be required as against the current global production of 3,500 to 4,000 million pairs. At present, more than 500 million pairs of footwear are being imported by the developed countries.

The export value of leather and allied products is expected to touch Rs. 600 crores in 1978-79, if the quota restrictions are strictly adhered to and the raw materials released therefrom are utilized for making finished leathers. The finished leather production alone is expected to increase to Rs. 400 crores. This background report is suggestive of the need for more high level leather technologists to translate the policy objectives into workable schemes and place India in the finished leather map of the world.

AVAILABILITY OF TECHNICAL PERSONNEL

The technical personnel available in the supervisory level may be divided into two broad categories—those who learnt the techniques through hereditary experience and practice and personnel from the leather training institutes and the two degree-course colleges.

At present, the College of Leather Technology, Calcutta, and the A.C. College, CLRI, Madras, impart higher education in leather technology with an annual intake of 35 students. There are six training institutes—one each in Madras, Calcutta, Kanpur, Bombay, Agra and Jullundur—which

produce trained personnel in leather technology. The list of the institutes and the number of seats in each (about 85) are provided at the end of this article.

Based on the working life of the institutes, the cumulative availability of trained technical personnel other than those who learnt the techniques by experience in the supervisory cadre is estimated below :

A. Leather Technology Higher Level

a)	Degree holders, B.Tech (B.Sc. Tech)	275
b)	M. Tech. (Leather)/M.Sc. (Chem)	42
c)	Ph.D. (Leather)	19
d)	Ph.D. (related subjects)	24
		360

B. Diploma and certificate holders (Leather): 1,800 to 2,000.

PROPORTION OF SUPERVISORY STAFF (ORGANIZED SECTOR)

The proportion of supervisory staff to total staff in the organized sector at an All-India level for the years 1968 and 1969 is presented below :

Year	Workers	Supervisory	% to total employees
	All Industries		
1968	3,261,092	707,211	17.82
1969	3,39,885	755,523	18.2
	Tanneries (70 units)		
1968	8,978	1,430	13.7
1969	9,874	1,842	15.7

Sources : Annual Survey of Industries, Government of India)

It is borne out by the data that the supervisory staff to the total staff accounts for a lower proportion of 13.7 to 15.7 in the tanneries as against the All India figure for all industries of 17.8 to 18%.

It is interesting to compare the proportion of supervisory staff and salary paid. As against 13.7% of supervisory staff in India for organized tanneries, the wages paid to them accounted for 28.8% in the total wages. The average annual wages per worker worked out to Rs 2,005 in 1969, whereas for supervisory staff the relevant amount was Rs 4,345—or more than double that of the workers.

PROPORTION OF SUPERVISORY STAFF (BASED ON EXPORT AND PRODUCTION)

In pursuance of the recommendations of the expert committee set up by the Government of India to restructure the production and export pattern, restrictions on the export of E.I. and wet blue leathers on a graded quota basis was introduced from 1st April 1973.

It has been estimated that if the quota restrictions are to be followed strictly over the period, the following export pattern should emerge in 1978-79 :

(Rs in crores)

	1972-73	1978-79
E.I. tanned leather	100.5	25.0
Wet blue leathers	52.0	13.0
Finished leathers	17.2	150.0
Fur, lizard, snake skins etc.	3.5	4.0
Leather footwear	9.8	130.0
Uppers and components	0.5	45.0
Leather garments	—	50.0
Other leather goods	4.0	17.5
	187.5	435.5

If an annual price increase of 8 to 10% is expected, the value of exports in 1978-79 would be around Rs. 600 crores. The value of production of leathers and footwear for internal use may be taken as Rs 400 crores (30 crore pairs of footwear, leather goods, industrial leathers etc.). The total value of production would be in the region of Rs 1,000 crores in 1978-79. If 1% value is reckoned as supervision cost, the total cost of supervision would be Rs 10 crores. In terms of individuals, if the average cost of a supervisor is taken as Rs 8,500 per annum (as against the actual annual wages of Rs 4,385 in 1969) it would work out to 11,800 or 12,000 for leather and footwear. About 40% may be required for footwear—that is to say 4,800—and the rest of 7,200 for tanning purposes. If 50% of the supervisory staff is reckoned to be technical, then the requirement of technologists for tanning work would be in the region of 3,600. As against the projected demand, the present availability is around 2,500, which leaves a gap of about 1,100. In the normal course, about 400 personnel will be trained by the existing institutes in the next 3 years and hence the net deficiency would be about 700, for which additional training capacities are to be created. The annual requirement would be about 200. At a conservative estimate, additional capacity has to be created in the diploma and degree levels for 100 personnel.

ANALYSIS OF PLACEMENT OF DEGREE HOLDERS FROM THE A. C. COLLEGE/ C.L.R.I., MADRAS

In the past three decades, the unique academic practical combination of A. C. Col and CLRI produced about 210 degree leather technologists, out of whom 1 obtained doctorate degrees and 35 were awarded post-graduate technical degrees. Their placement details are given below :

PLACEMENT OF B. TECH DEGREE HOLDERS (LEATHER) MADRAS UNIVERSITY (A.C. COLLEGE/CLRI)

Area	1945-66		1945-75	
	No.	%	No.	%
1. Central Leather Research Institute	29	26	28	13
2. Central Government	18	16	17	8
3. State Government	17	15	23	11
4. Private Sector	17	15	66	31
5. Own Business (Leather)	5	5	31	15
6. Non-leather employment	3	3	10	5
7. Trainees, post-graduate students	12	11	5	2
8. Drop-outs	1	1	2	1
9. Disabled, deaths etc.	—	—	4	2
10. Unemployed and failed	—	—	2	1
11. Personnel abroad	8	8	22	11
	110	100	210	100

In the first two decades ending 1966, about 110 personnel were awarded B. Tech degrees and the CLRI was the single largest employer with 26%, followed by the Central and State Governments. The private sector and entrepreneurs in leather together accounted for only 20%. In the past decade, there was a healthy wind of change with the private sector, including self-employed entrepreneurs, rising from 20% to 56% of the technologists and in terms of numbers about 100. Employment in the Central Government and the CLRI was even less by one each and the relative decline in percentage terms was more than 50%. The private sector pull for qualified technologists must have been attributable for this change in proportion of employment.

At the CLRI, four officers head various areas, seven are engaged in the extension work, four are engaged in training, and the rest are employed in other applied areas. About seven of them had served as U.N. leather experts in developing countries.

The Small Scale Industries Development Organization, Planning Commission, Defence and D.G.T.D. offer employment to technologists in the development and policy formulation side of the leather industry.

UNDER STATE GOVERNMENTS

B. Tech degree holders numbering 23 are employed by 13 State Governments and more in Tamilnadu, Bihar and U.P. The establishment of various State Leather Development Corporations with production programmes has provided increased employment opportunities for technologists.

IN PRIVATE SECTOR

According to details, 66 graduates are working in the private sector. Thirteen are employed in chemical and auxiliary companies, which indicates that about 6% are working as sales promotion technical officers. It is interesting to note that more than 50% of those employed in the private sector are those who passed out in the last five years. Three leading tanneries, including the one recently set up, together employ 40% of those employed in the private sector. The rest of the 60%, numbering 36, are employed by about 24 tanneries and chemical companies with a small average of less than two hands.

OWN BUSINESS

According to available information, 31 people are engaged as partners and proprietors of tanneries. The spurt in the activity of the industry in taking up more finished leather production in the past decade is indicated by the sizable number of technologists turning entrepreneurs. It is a very healthy and encouraging sign of development, which was very much wished by Prof. Nayudamma in 1966. As against 5 entrepreneurs in 1966, that figure increased to 31 in 1975—that is to say, in the past ten years about 26 people have launched their own leather production and trade. Realizing the importance of the course, some tanners have also sent their wards for the course.

PERSONNEL ABROAD

In overseas service, 22 technologists are employed in eight countries and the majority moved out in the past decade. It is gathered that most are engaged in research allied to, but not directly related to, leather. About 5 are undergoing post-graduate studies.

OTHERS

It is gathered that one graduate is unemployed and we hope that he too secures employment by the time this article is published. The dropouts are few—less than one per cent.

STATEWISE DISTRIBUTION

At the end of this article, the place of work of graduates is indicated. They are spread in 13 States, including Delhi. The growing production of finished leather in Tamilnadu is testified by the increasing employment of graduates in leather technology. In Tamilnadu about 80 graduates are employed in the production sphere alone. The situation of CLRI adds to the number and makes Tamilnadu the prime employer of graduates (56%). Other States that employ more than 5 graduates are Madhya Pradesh, Maharashtra, Bihar, U.P. and Delhi. Placement overseas (22) is the next biggest percentage in this group and the U.S.A. is the major employer of our technologists abroad.

PLACEMENT OF POST-GRADUATES AND DOCTORS

Organization	Ph.D.	M. Tech
a) Central Leather Research Institute	10	9
b) State and Central Government	—	4
c) Private Sector	3	17
d) Personnel abroad	6	5

The CLRI has the major number of doctors who are engaged in research, extension and teaching. A leading tannery and two leather auxiliaries and chemical firms employ the three doctors. Six doctors are working in the U.S.A.

The post-graduates are engaged both in research and in private sector tanneries. Their employment in sizable number in the private sector is a sign of healthy and progressive industrial growth.

OVERALL ANALYSIS

The broad placement classification of B. Tech graduates is presented below :

	No	%
(a) Research, development, extension and teaching (CLRI & ILT etc.	34	17
(b) Industrial promotion, technical extension policy formulations etc. on leather, S.S.I., D.O., State Govts., Khadi Commission and D.G.T.D.	17	8
(c) Production management (private and public sectors)	90	43
(d) Auxiliaries and chemicals sales and demonstration etc.	20	9
(e) Non-leather professions	19	9
(f) Higher studies	10	5
(g) Others (not exactly known etc)	20	9
	210	100

The analysis of the area placement of graduates reveals that the majority are engaged in production management as technical supervisors and in some cases technical proprietors. The next important group (25%) are engaged in research, teaching, industrial promotion, extension and policy formulation in respect of leather and allied industries. In the field of chemical and auxiliary sales and technical demonstration etc. about 9% are engaged. A sizable number of about 1[illegible] are shown in non-leather professions and of them 12 are abroad working in related fields though not directly connected with leather.

It is interesting to note that one leather technologist became a Catholic priest after a few years in research, another is in the postal audit and yet another in the hardware business. In the present growing market for leather technologists, some of them can be reconditioned for active service by arranging refresher courses etc.

PLACEMENT OF DIPLOMA HOLDERS FROM I.L.T. MADRAS

It may be seen from the statement at the end of this article that more than 80% of diploma holders are serving in the public and private sectors and engaged in active production. About 7% are self-employed entrepreneurs in the leather industry. This again shows that the leather industry is progressing fast in taking up the production of more processed products.

A review of placement of leather technologists from A.C. College | CLRI amply proves that these institutions have helped a great deal in the past three decades in providing vital technical manpower to restructure the production and export pattern of leather. The demand for technologists

began in the mid-60s and with the introduction of wet-blue leathers for exports has been growing fast in the past five years, becoming more pronounced after the introduction of quota restrictions on the export of semi-tanned leathers in 1973. The establishment, expansion and diversification of production by a few big tanneries, enlargement of activity by some chemical firms and organization of the Leather Development Corporation with production programmes in selected States have all created additional demand for leather technologists particularly in the middle and higher level, which may be sustained in future. The CLRI was the single largest employer of graduates till the mid-60s and considered to be a rather secure and promising source. In the past decade, the number of graduates employed in CLRI had even reduced by one with a few experienced personnel migrating to industry. The industry's demand pull is evidenced by people in the middle and even senior level moving to the private sector from the so-called secure public sector. The growing industrial structure of the leather industry is also testified by the expansion of chemical firms relating to leather which provide gainful, challenging employment to experienced technologists.

SUGGESTIONS

It has been lamented that there are divergent syllabi and plurality of courses at the diploma and certificate levels on leather in different regions of India. In order to overcome this malady, the regionalization of the diploma level of training programmes can be effected. The existing training institutes at Calcutta, Bombay, Kanpur and Madras can be upgraded to cater to the needs of contiguous States.

2. A Central Advisory Board for education in leather may be constituted to draw up a uniform syllabus and examination system and also to assess the requirement of personnel periodically by the industry, trade and Government organizations. A Central Board of Examiners drawn from the staff of the proposed regional Institutes may be constituted for evaluating the proficiency of the trained Diploma/Certificate level students.

3. The two degree colleges at Calcutta and Madras should also try to adopt a uniform syllabus and periodic exchange of staff may also be considered.

4. The requirement of personnel is expected to be considerable in the next five years. The training period is generally not less than three years and hence the possibility of training graduates in chemical engineering for one year in leather can be explored.

5. It is essential that the B. Tech. students at the end of the fourth year may be given an option to specialize in Management, Engineering, Industrial Chemistry or Research. The specialized business management syllabus would consist of Commerce, Production Organization, Industrial Psychology, Marketing, Economics and project planning and appraisal. The specialized areas in Engineering would comprise Mechanical Engineering, designing and fabrication, elements of hydraulic and electronic engineering, public health engineering etc. In the case of research, the submission of a thesis on a practical aspect may be insisted upon for awarding the degree.

6. The economics of the leather industry should be included in the curriculum. In-plant training for about 6 months in a tannery should be revived for B. Tech students. A certificate to the effect that the student has worked in all departments satisfactorily from the owner should be made a prerequisite to the award of a degree.

7. The technical institutes (colleges etc.) should make co-ordinated efforts to forge closer links with the industry. Industry should provide the institutions technical and other information and sponsor candidates. The Institutes of higher learning on leather should produce entrepreneurs more than mere academicians. It must be the endeavour of everyone to advance available knowledge by introducing new processes, or products, or improving existing ones. It is rightly said, 'Learning is an activity of thought. It is not stuffing the minds with facts. We must be able to use what we learn, test it, throw it into fresh combinations. It must become vibrant with powers and radiant with light'.

The authors thank Dr Y. Nayudamma for suggesting the topic (as far back as 1966) and Mr T. S. Krishnan for providing details on the placement of personnel.

The views expressed in this article are the authors' only and do not represent the Institute with which they are associated.

This article formed the text of a paper read by the authors at the Eleventh Tanners' Get-Together at Madras held from January 31 to February 6.

PLACEMENT OF DIPLOMA FROM THE INSTITUTE OF TECHNOLOGY, MADRAS

	Total No. Of Qualified
(a) Diploma holders from 1956-57 to 1974-75 ..	349
(b) Placement in public sector	111
(c) Placement in private sector	172
(d) Self-employed or in own business allied to leather	25
(e) In No -leather pursuits ..	34
(f) Others	7

EXISTING FACILITIES AVAILABLE EDUCATION IN LEATHER TECHNOL AND FOOTWEAR AT VARIOUS I

	No.
	Leather F
I. LEATHER TECHNOLOGY	
(a) B.SC. (Tech) courses	
1. A. C. College of Technology, Madras (Duration 5 years)	20
2. College of Leather Technology Calcutta (Duration 4 years) ...	15
II. DIPLOMA COURSES	
1. Institute of Leather Technology Madras (Duration 3 years)	30
2. Government Leather Institute Kanpur (Duration 2 years) ..	10
3. Government Tanning Institute Jullundur (Duration 2 years)	10
4. Government Leather Institute Agra, U.P. (Duration 2 years)	
5. Government Tanning Institute Bombay (Duration 3 years) ..	
6. College of Leather Technology Calcutta (Duration 3 years combined leather and footwear technology)	
7. Leather Working School Dayalbagh, Agra (Duration 2 years)	
8. Government Leather Working School Bombay, (Duration 1 year) ..	

DIFFUSION OF B. TECH. GRADUATES (LEATHER) (A. C. COLLEGE/CENTRAL LEATHER RESEARCH INSTITUTE)

State	Nos.	Percentage
1. Tamilnadu	117	55.71
2. Madhya Pradesh	15	7.14
3. Maharashtra	10	4.76
4. Delhi	8	3.80
5. Bihar	5	2.38
6. Uttar Pradesh	5	2.38
7. Punjab	3	1.43
8. Andhra Pradesh	3	1.43
9. West Bengal	3	1.43
10. Gujarat	3	1.43
11. Karnataka	2	0.95
12. Kerala	1	0.48
13. Orissa	1	0.48
14. Assam	1	0.48
15. Not exactly known	11	5.24
16. Employed overseas	22	10.48
(a) U.S.A. 14		
(b) Canada 2		
(c) W. Germany 1		
(d) U.K. 1		
(e) East Africa 1		
(f) Malaysia 1		
(g) Australia 1		
(h) Nepal 1		
Total	210	