SUSTAINABILITY OF PLYWOOD AND BLOCK BOARD INDUSTRY IN INDIA

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Abstract
This paper presents the challenges and opportunities plywood and block board industry is facing today. A SWOT (Strengths, weaknesses, opportunities and threats) analysis of the industry is carried out. These are analyzed by conducting a survey of the randomly selected plywood and block board industries. Most of the plywood and block board making units are facing problems of low productivity, low wood utilization, use of obsolete technologies, and ignorance of latest industrial engineering techniques. Concept of proper work method is missed in most of the units. Most of the units are not conscious about the low productivity and utilization of resources and related factors. On the basis of survey analysis we come to know that plywood and board industry is facing a serious problem of poor quality and low productivity. Need of the hour is to deliver high quality products through continuous improvements in product features, bring new products to the market, and make product changes faster and more manageable. It is also necessary to improve forecasting accuracy of the product demands, reduce costs, improve employee training, improve information systems and networks to achieve greater flexibility of manufacturing functions. The major threat to the industry is the Supreme Court directive (SCD) of stopping addition of fresh capacity after 28\textsuperscript{th} Oct., 2002.

Keywords: Plywood and Block Board, Strengths, Weaknesses, Opportunities, Threats.

1.0 Introduction
The industry desperately warrants a revitalization dose to enable them not only to survive the bad weather, but also to improve it to raise it to the coveted role it is supposed to play in the construction activity of India and abroad. Attempts have miserably failed in the international market because of the lack of value the Indian plywood got in the international market than for plywood / wood products from Brazil, Malaysia, Indonesia, and China in that order, and the industry’s specific export attempts have suffered miserable losses. China has become a serious competitor in the global plywood market, especially in East Asia (Adams Mike, 2002).

What has ailed the grant of due product value to Indian plywood is mainly because of poor quality in terms of variability and inaccuracy in dimensioning, thickness and density. The Indian ply and block boards are subjected to aberrations in intra-product variation and waviness in thickness and is hence rendered poor quality rating. The overlap and opening in grains are phenomenal, and the industry increasingly resorts to filling of inter layer crevices at the ends rather than controlling the menace in the production stage. There is a general lack-of-concern on product quality as has always happened in the industry in general witnessed before the TQM (Total Quality Management) movement. The plywood industries increasingly deserve to adopt TQM as a panacea for revival because of its role in building the country (Thareja, 2005).

2.0 Indian plywood and board manufacturing industry
Today India is one of the six fastest growing economies of the world. The construction sector accounts for about 6% GDP and its contribution is likely to increase with passage of time. It employs 31 million workmen, and is the second largest sector employing skilled and semi-skilled labor after agriculture sector in India. The annual turnover of Indian plywood industry is approx. 6000 crores. Out of which unorganized sector share is 90% and organized sector is only limited to 10 % e.g. Green ply, Century, Kit ply, Duro ply, Uni ply and Virgo ply etc.(Ply Reporter,2005).
India has emerged as one of the biggest consumer of the tropical timber (wood used for making of face veneer) in the world, with sizeable imports from Malaysia, Myanmar, Indonesia, New Zealand etc. India has 16% of the world’s population, but only one percent of the world’s forests. So Annual industrial round wood imports have tripled in the last five years to over 2 million cubic meters and estimated that by the year 2012 this round wood import may touch 10 million cubic meters. And export of plywood from India was only 89,13,700 sq. meter during 2002–2003 and 84,65,232 sq. meters in the year 2003–2004. (Ply Digest, 2005).

One of the most consumed natural resources for various domestic and industrial requirements is wood. It has wide applications such as fuel, raw material for various construction, fitting purposes, furniture, paper, cardboard etc. as a result of which our natural resources of wood i.e. forests are fastly being cut and are getting depleted. The net direction it takes is very vital because that can not only mar the future sustainability of the industry but also the very future of India or of the issues, which are linked with global warming. This has raised a worldwide awareness of forests conservation. One of the major steps taken towards it is the introduction of AGRO – FORESTRY i.e. agriculture of wood e.g. Poplar and Eucalyptus trees; to fulfill the various Industrial and domestic consumption and needs.

2.1 Importance of plywood and board industry
Main products of these industries are plywood of different grades and block boards of different types and sizes. Most of the plywood and board manufacturing industries are registered under the act of small scale manufacturing industries (SSMI). Major advantage of these industries is their very low capital-output and capital-labor ratios. This means that capital investment required per unit of output and per unit of employment is very low. This is of particular importance to a labor abundant and capital scarce economy like India. SSMI contributes almost 40% of the gross industrial value added in the Indian economy. On the other hand these also discourages deforestation by enabling availability of wood based construction materials abundantly and cheaply in standardize forms especially supporting modular construction methods.

3.0 Case Study
The study was carried out in the selected plywood and board industry in the twin city of Yamunanagar and Jagadhri (Haryana). A pilot survey of plywood and block board industry was carried out by using a questionnaire. The data was collected by filling the questionnaire and conducting personal interviews with the concerned workers, officials, supervisors and entrepreneurs. For this a questionnaire was designed to collect the data on different factors related to productivity and quality. 20 units were randomly selected to assess the productivity and quality related problems and out of these only 16 units responded. 12 units were complete integrated whereas one each was only peeling, only saw mill, only pressing and combined peeling and pressing units.

3.1 Process character & significance
The complete process of plywood and block board making is explained with the help of a flow process diagram. The different stages in the process of plywood and block board making are shown in Figure 1. For the sake of brevity only process of plywood and block board making is discussed while limiting the scope of this paper. Reproduced below is an extract of a typical process of plywood and block board making.

3.2 Industrial SWOT Analysis
Plywood industry is at crossroads today. A SWOT analysis (Strength, Weakness, Opportunities and Threats) quickly precipitates out the issues, which are largely misdoings of the industry itself. The industry has sprouted largely inductively and intuitively, merely looking at short term gains, and even flouting the restrictions imposed by Supreme Court of India. Some of such SWOT points are briefed in Table 1. Major issue is revival of technology, processes and practices so as to improve technological competence and a part of competitiveness limited only to the terms of process governance.
Wooden Logs (Over-size)
Debarking
Peeling Machine
Core Veneer Cutter
Core Veneer Dryer
Veneer Hot Pressing
Glue Spreader
Ply Assembly Table
Ply Hot Pressing
D. D Saw Cutter
Sanding
Stamping and Grading
Dispatching

Wooden logs (Under-size)
Band Saw (Planks)
Seasoning Chamber
Plaining of Planks
Rip Saw (Battens)
Cutter (Batten Cutting)
Board Filling Table
Board Assembly Table
Board Hot Pressing

Figure 1. Process Flow Diagram
### Table 1. SWOT analysis (strength, weakness, opportunities and threats) of plywood Industry

<table>
<thead>
<tr>
<th>Sr.No.</th>
<th>Factor</th>
<th>Aspects/Significance</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>STRENGTH</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>A well developed network and acceptability of product category in general.</td>
<td>It involves transport system, dealers, and retailers, resin and auxiliary suppliers, carpenters etc.</td>
</tr>
<tr>
<td>2</td>
<td>A well developed down stream industry, having developed an assured market.</td>
<td>Even rejected plywood scrap is sold by recyclers namely furniture industry.</td>
</tr>
<tr>
<td>3</td>
<td>Productive semi / skilled workforce ready to exploit opportunities in existing competence.</td>
<td>Productive in terms of employment, but may not be in results, (which need to be benchmarked?) Further productive but not resources wise efficient. Except for a reported 4 - 8% losses in timber most of the raw materials recycled.</td>
</tr>
<tr>
<td>4</td>
<td>There is no conceptual wastage. All components of system are usable, reusable or recyclable.</td>
<td></td>
</tr>
<tr>
<td><strong>WEAKNESSES</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Poor management commitment</td>
<td>Many claim that at the root of disinterest /lack of commitment is the supreme court decision. But it could be vice versa.</td>
</tr>
<tr>
<td>2</td>
<td>High dependence for face veneer on imports, and difficult land shipping from importers.</td>
<td>Because special woods are not available in India; However there is a potential of developing alternative paper based products for which R&amp;D should be initiated.</td>
</tr>
<tr>
<td>3</td>
<td>Poor national awareness and inaction on forestry.</td>
<td>Endeavors on forestry development are rather on papers.</td>
</tr>
<tr>
<td>4</td>
<td>Very poor housekeeping and safety awareness.</td>
<td>Due to poor planning, poor work styles, poor material handling, poor disposal systems and poor provisioning and maintenance of environment control systems, house keeping standards are absent.</td>
</tr>
<tr>
<td>5</td>
<td>Low awareness and wherewithal to use solar and non conventional energy resources.</td>
<td>When there is fuel all around, the need to optimize energy consumption is generally never a pressure. Essentially because there is no ownership, by management of the workforce and by operators of the equipment, because the workforce essentially belongs to the contractor.</td>
</tr>
<tr>
<td>6</td>
<td>Poor educational input because of lack of concern and ownership.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Poor in general storage facilities for face veneer and lack of awareness for its handling and upkeep.</td>
<td>High breakage rate, even after relevant repairs. Repair of the same is considered normal / routine. The degradation in quality never warrants analysis.</td>
</tr>
<tr>
<td>8</td>
<td>Larger provision of allowances in process and raw material design, and consequently resource wastage and increased in competitiveness.</td>
<td>The panel processing practicing, standards and schedules to be improved.</td>
</tr>
<tr>
<td>9</td>
<td>Specifications and quality commitment in general are of poor standard.</td>
<td>Better and world standard specifications to be incorporated.</td>
</tr>
</tbody>
</table>
### OPPORTUNITIES

1. **Cheap Semiskilled manpower.**
   - Training in TQM to be popularized.

2. **Use of suitability designed jigs and fixtures.**
   - To obviate frequent stapling practice. These increases weight and additionally use of brass pins.

3. **Awareness and need to explore foreign markets and intention to launch a bid for competing them.**
   - Improvement in quality and competence to help build confidence.

4. **Possibility of introducing more value added products.**
   - To improve percentage utilization of wood also.

5. **Import of superior machines/technology and corresponding benefits in productivity and quality.**
   - Not withstanding energy intensive imports. Use of solar energy to be made popular.

### THREATS

1. **Languishing forest area.**
   - Lowering forest area not only threatens reduced raw material availability but also mount societal pressure against the industry.

2. **Increasing gap between technological developments and product specifications abroad and in India.**
   - Technological superiority and world scale capacities are much bigger in our nearest rival say China.

3. **Threat of supreme court to close capacities appearing after Oct. 2002.**

4. **Poor mechanization and excessive dependence on contractual and migratory labor.**
   - Discipline, quality and productivity are rather more pressing issues.

5. **Provisioning of residential facility in campus to control the labor turnover, who engineer fire safety threats.**
   - They tend to cook outside their cottages, well with in the boundary of plywood industry, threatening fire safety standards.

### 3.3 Data Collection & Analysis

The analysis of the data collected by taking the response in the questionnaire and personnel interviews showed revealing results. Concept of proper work method was missing in most of the units. Maximum of the units are not conscious about the low productivity and utilization of resources and related factors. Most of the units are ISO: 9000 certified and their products are also ISI certified. But the ISI graded production is very low percentage (less than 65%) of the total production volume. There could be business reasons to accept the non ISI products and sell it as 2nd graded in the market. In most of the units manual material handling system is adopted. No unit is aware of energy conservation methods and even today 92.85 % of the units are using low efficient steam boilers. Even the units are not serious about improvement in wood utilization which results in high wastage of wood (to the extent of 45% - 50%). Different causes of low productivity in plywood and board making is explained in Table 2.
Table 2. Causes of low productivity in plywood and board industry:

- Lack of industrial engineering approach.
- No labor welfare.
- Lack of R & D.
- Poor quality of product.
- Very low capacity utilization.
- Lack of standardization.
- Bad layouts increase man-material movements.
- Manual material handling.
- No proper wood utilization awareness.
- Bad planning of works, adds idle time of men & machines.
- No planning for inventory control.
- Poor working conditions.
- Lack of energy conservation.
- Use of obsolete technology.
- Lack of proper marketing strategy.
- Lack of automation / mechanization in plywood industry.

4.0 Conclusion
Wood utilization is not taken care of as they feel that the waste wood is not lost and is used as fuel. In the real sense this is a big loss as the raw materials cost is more than five times the cost of fuel wood. On the basis of survey analysis we come to know that plywood and board industry is facing a serious problem of poor quality and low productivity. The major threat of the industry is the Supreme Court directive (SCD) of stopping addition of fresh capacity after 28th Oct., 2002. More than 500 plywood and wood-based units are facing closure in Haryana which started without prior permission from Central Empowered Committee, (The Tribune, 2005).

References
   The Tribune (2005), “More than 500 plywood units in Haryana face closure” November 27, Chandigarh.