

Session 10

[Thursday 4th period 2.0 hours Main Hall]

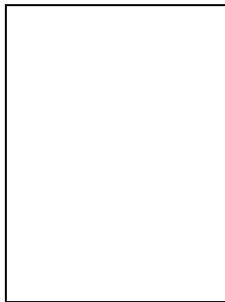
Wood product and industry development in the formal sector

Speakers



Speaker:
Jegatheswaran Ratnasingam

Topic:
Sustainable Wooden Furniture Manufacturing in Malaysia: The Role of Industrial Clusters



Speaker:
K Satyanarayana Rao

Topic:
Promoting Technology Based Processing and Utilization by Small and Medium-Sized Enterprises (SMEs) – The Key to Developing Wood as a Sustainable Material in India



Speaker:
Shengfu Wu

Topic:
The Struggling Chinese Woodworking industry: Challenges and Solutions



Speaker:
Arif Nuryawan

Topic:
The Description of Marketing Mix at Three Level Furniture Industries in Medan area, North Sumatra, Indonesia

Sustainable Wooden Furniture Manufacturing in Malaysia: The Role of Industrial Clusters

Jegatheswaran Ratnasingam¹

Abstract

The Malaysian forest products sector provides employment for about 400,000 people, while contributing almost US\$ 5 billion in foreign exchange earnings over the last several years. Although the production inputs, such as raw materials and labor, have experienced cost increments over the years, the industry has been able to retain its competitive edge, especially in the furniture manufacturing sector. The Malaysian furniture industry has emerged as the fastest growing sub-sector in the forest products sector, and continues to record impressive 20% annual growth over the last decade. With almost 3500 furniture manufacturing enterprises operating in the country in 2010, the furniture sector provides employment to a total of 87,000 workers. The unique industrial structure, organized within industrial clusters, has been able to keep the overhead costs significantly low, while at the same time providing the much needed flexibility in term of product diversity and volume production. This flexibility of the industry is derived from the small and medium enterprises, which make up about 85% of the total manufacturing enterprises, which are focused on specific operations, hence providing much needed economies of scale to ensure cost competitiveness. On the other hand, these small and medium enterprises operate as a single manufacturing unit, supporting a few large enterprises that are engaged in the marketing and product development activities. The large enterprises also serve as creditors to ensure a continuous financial line that will enable the small and medium enterprises to secure the required production inputs at competitive prices. Although successful industrial clusters can be found in many other nations such as Italy and Taiwan, the Malaysian furniture clusters are unique in the sense that the small and medium enterprises are often start-ups of larger manufacturing enterprises, which ensures that the small and medium enterprises are able to cope up with the quality and production requirements of the large enterprises. In essence, the Malaysian furniture clusters have not only been able to develop the booming furniture industry in the country, but it has also contributed significantly to the development of entrepreneurship in the rural economies of the country.

Keywords: Forest Industry Cluster, Furniture Industry, Entrepreneurship, Product Diversity, Development Economics

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1. INDUSTRIAL CLUSTERS IN PERSPECTIVE

Industrial clusters throughout the world have contributed towards industrial development (Scott, 2006), and many studies provide evidences in support of the multiple roles played by such clusters (Iammarino and McCann, 2006). It is a well established fact that industrial clusters have also driven the rapid expansion of industrial outputs in many instances, and this is especially true in labor-intensive and resource-based industries, such as wood products manufacturing. In this context, this paper provides an insight into the development and contribution of industrial clusters in the forest industry in Malaysia, particularly the furniture sector, which has emerged as a strong and resilient industry within a period of just over two decades. The paper also elaborates on the characteristics of the furniture cluster, and also its direct and indirect contributions towards industrial development and overall economic growth.

2. AN OVERVIEW OF THE MALAYSIAN WOOD-BASED SECTOR

The Malaysian wood-based industry has emerged as the second most important commodities sector in the country after the oil palm industry. With export values of US\$ 5.61 billion in 2010, the sector plays a dual role, of a large foreign-exchange earner as well as an important provider of employment. As of 2010, the total number of workers employed in the sector was close of 347,000.

Over the years however, the export constituents of the Malaysian wood-based industry has changed dramatically. From being a large exporter of primary commodities, such as saw logs, sawn timber and plywood, the industry has been transformed to become a large exporter of value-added products, such as furniture, molding, joinery, etc. In this context, it must be emphasized that the Malaysian furniture industry has become the leading sub-sector within the wood-based industry.

Since 1985, the Malaysian furniture industry sector has been growing steadily. Within a period of two decades, the furniture industry has grown to become the star performer of the Malaysian wood-based sector. From its humble cottage-industry background in the early 80's, the furniture industry has grown to become a very important socioeconomic sector. From an export of US\$ 6 million in 1982, furniture exports breached the US\$ 2.5 billion mark in 2008. Against this background, it is no surprise that the Malaysian furniture industry has emerged as one of the top-10 most important furniture exporters in the world (Ratnasingam and Thomas, 2008). Despite the globalization of the furniture industry and the emergence of many other furniture producing nations, Malaysia's resilience in the furniture manufacturing sector is attributed to the strength of its furniture clusters, which account for almost 65% of the total furniture output of the country. In this paper, the success of the Malaysian furniture industry is critically evaluated from the perspectives of the furniture industry clusters, with the aim of highlighting the best practices for possible emulation elsewhere.

3. THE MALAYSIAN FURNITURE INDUSTRY – IT’S DEVELOPMENTAL PHASES

The development of the Malaysian furniture industry could be traced back to three distinct stages (Ratnasingam and Tan, 2002), as elaborated below.

3.1 Pre Industrial Master Plan Stage

In the early 80’s, Malaysia was a large exporter of commodities, primarily sawn timber and plywood. In realizing the potential earnings of the wood-based sector, the government embarked on an industrialization strategy, which focused on the export trade.

3.2 The 1st. Industrial Master Plan Stage (1986 – 1995)

The First Industrial Master Plan (1986 –1995) was aimed at enhancing down-stream wood processing activities. The government provided numerous fiscal incentives and policy instruments aimed at spurring such activities, particularly amongst up-stream activity players. The annual growth rate during this stage was in the range of 40%.

3.3 The 2nd. Industrial Master Plan Stage (1996 – 2005)

The export oriented growth continued into the Second Industrial Master Plan, but the focus had shifted towards the manufacture of export of greater value added furniture. Nevertheless, the annual growth rate during this stage declined to about 15%, as the industry gained greater maturity.

Recently, the Malaysian government had introduced the 3rd Industrial Master Plan (2006 – 2020), which focuses on ensuring global competitiveness of the Malaysian industrial sectors through innovation, and the furniture manufacturing industry has been targeted as one the resource-based industries that would embark on such a growth path.

4. INDUSTRIAL GROWTH DRIVERS

The growth drivers of the Malaysian furniture industry have been well researched (Ratnasingam and Thomas, 2008), and are elaborated below.

4.1 Raw Materials Supply

Factor endowments, particularly the ample availability of raw materials has been hailed as one of the most important success factors. Yet, the competitive edge derived from the raw materials has been steadily diminishing over the years.

Rubberwood

Rubberwood (*Hevea brasiliensis*) is the most important raw material for the furniture industry in the country. A plantation resource, it is environmentally friendly and is therefore an attractive renewable resource for furniture making. There are about 1.3 million hectares of land under Rubber cultivation in the country, and the supply of Rubberwood sawn timber for the furniture industry is in the range of 350,000 m³ per annum. However, the price of the

wood has risen from US 150 per m³ in mid 80's to US 445 per m³ in 2010. Nevertheless, Rubberwood furniture accounts for 80% of the total wooden furniture exports from the country. In order to ensure consistent supply of the material to the furniture industry, an export levy on sawn Rubberwood (US 32 per m³) and an annual export quota of 30,000 m³ has been enforced since early 2000.

Other Materials

The export of furniture made of other materials such as rattan, bamboo, metal, plastic, etc. is small and contributes about 20% of total furniture exports from Malaysia. Although rattan and bamboo grow naturally in Malaysia, its supply and future availability remains a concern.

4.2 Labor

The availability of a cheap workforce has often been cited as another of the success factors of the furniture industry in Malaysia. This was the case previously, but with the rapid industrialization in the country, the cost of labor has risen steadily. In 1986, the labor rate was US 1.50 per day, while in the 2010, it has risen to US 10.30 per day.

Workforce Composition

Due to the rapid expansion of the Malaysian furniture industry, the use of foreign workers (predominantly from Bangladesh and Indonesia) has become inevitable. In the year 2000, 43% of the workforce in the furniture industry consisted of foreign contract workers.

Labor Productivity

The inherently low entry barrier coupled with the extensive use of foreign workers in the industry has made the workforce in the Malaysian furniture industry characteristically mobile. Under such circumstances, labor productivity has stagnated over the years at a level of about US 25,000 per worker per year. It must be emphasized that the Malaysian furniture industry is essentially a low wage economy, which is not attractive to the more stable local workforce (Ratnasingam and Ioras, 2003).

Human Resource Development

Against the need to create a skillful local workforce, the government established the Human Resource Development Fund (HDRF) in 1993 and subsequently the Human Resource Development Council (HDRC). Both these initiatives were aimed at producing skillful local workforce for the furniture industry. Employers were required to make a mandatory contribution of 1% from the payroll to the fund, which is then used, for training the workforce (Ratnasingam, 2003). Nevertheless, the effectiveness of the development program has not been up to mark due to the reluctance of employers to send their workers for training due to limited contractual obligation and the non-relevance of the training programs offered.

4.3 Capital Out-Lay

The rapid growth of the Malaysian furniture industry has been driven by incremental capital inputs, an indisputable fact which is well documented in several studies (Porter, 1998; Scott, 2006; Ratnasingam and Thomas, 2008,; Roveda and Vecchiato, 2008). This is further attested

by the number of furniture manufacturing enterprises, which has increased from 148 in 1982 to almost 3500 in 2010.

Domestic Investment

Domestic investment is high in the furniture industry and stands at about 70% of total investment.

Foreign Direct Investment (FDI)

Foreign investment in the furniture industry was equal to about 30% of the total investment, and investors from Taiwan and Singapore are the biggest players. Liberal government policies together with encouraging investment packages have promoted relocation of manufacturing bases to Malaysia.

4.4 Technology Application

The level of technology employed within the Malaysian furniture industry is on par with other furniture manufacturing countries, with almost USD 35 million in technological investments takes place annually (Ratnasingam and Thomas, 2008).

4.5 Government Policies

The role of the government in the development of the Malaysian furniture industry is very significant and cannot be downplayed. In fact, it is argued that government intervention has been the other main growth factor, apart from factor inputs, driving the furniture manufacturing industry

Political and Macroeconomic Stability

This conducive political climate is a boost for investors and the manufacturing sector as a whole.

Tariff Protection

Imported furniture and furniture parts were subjected to an import duty of 28% in mid 90's but gradually this has been reduced to 0% in line with the Asean Free Trade Area (AFTA) requirement.

Financial Incentives

The financial incentives provided to the furniture industry are very good and have been cited as one of the main reason for the rapid expansion of the furniture industry in the country.

Public Deliverables

The government has also delivered public goods, such as education, health, etc. to ensure the socioeconomic development of the society in the whole.

Infrastructure

Infrastructure such as kiln drying facilities and finishing centers have been established in furniture villages to encourage the growth of the furniture industry in the vicinity.

Gazetted Industrial Estates for Furniture

Industrial estates or furniture villages have been established throughout the country to aggregate the fragmented furniture manufacturers in a specific location, in order to ensure local synergy and networking.

Against this background, it is apparent that the growth of the Malaysian furniture industry has been driven by factor inputs as well as favorable industrial policies, both of which resulted in rapid industrial expansion. Nevertheless, the argument that industrial growth would be unsustainable due to increasing competitive pressure from other cheaper furniture nations in the Asian region has not held true. This is primarily due to the strength within the industrial structure of the furniture industry (Iammarino and McCann, 2006; Callois, 2008; Beerpoet, 2008)

5. INDUSTRIAL STRUCTURE

The Malaysian furniture industry is highly fragmented, and is predominantly composed of small and medium enterprises (SME). In 2010, only 134 mills were classified as large manufacturers, while the remaining was classified as SMEs.

Small and Medium Enterprises (SMEs)

The predominance of SMEs in the Malaysian furniture industry is very significant. Nearly 85% of the furniture manufacturers in Malaysia fall into this category.

Large Manufacturers

About 15% of the furniture manufacturers in the country are large manufacturers, but they contribute 65% of the total industrial output (large manufacturers are those employing more than 100 workers and with an investment of more than US 2.5 million).

6. CLUSTERS IN ACTION

The rapid expansion of the furniture manufacturing base has been attributed to the extensive networking or sub-contracting activities prevailing in the industry. Such a practice enables economies of scale and a spread of overhead, which enables cost competitiveness. Furthermore, it allows a high degree of flexibility, both in product diversity and production volume, in short manufacturing cycle-time. This network forms the furniture clusters, and among the notable furniture clusters in Malaysia are Muar, Klang Valley, Bukit Rambai, Ipoh and Sg. Petani.

Nevertheless, the most successful furniture cluster in Malaysia is located in Muar, in the southern state of Johor (Figure 1). The Muar furniture cluster is composed of predominantly

ethnic Chinese furniture manufacturers. Among the 387 furniture manufacturers, there are 34 large manufacturers located in this furniture village, while the rest are small and medium enterprises (SME) offering sub-contracting services. This furniture cluster contributes 40% of the total furniture export of the country. The reasons for the success of the Muar furniture cluster are:

1. Close proximity to the Rubberwood resource
2. Close proximity to the Johor and Singapore Ports
3. A large pool of experienced carpenters, as most of the factories in this area are family-owned and have been in the business for more than 20 years.
4. Close proximity to Singapore, which is the regional center for machinery and fitting/hardware suppliers
5. Good Infrastructure

The Muar furniture cluster has made tremendous contributions towards industrial development and entrepreneurship (Ratnasingam and Thomas, 2008). Since 2005, the Muar furniture cluster has transformed itself into a model that resembles the highly successful furniture cluster in Kaoshiung in Taiwan. The greater supply flexibility and product diversification adopted has resulted in the strengthening of the supply chain within the Muar furniture cluster. In this respect, it is regarded as a highly successful industrial area, outside the government-gazetted industrial free-trade zones. Therefore, the Muar furniture cluster is unique and warrant an in-depth analysis.

The Muar furniture cluster not only provides for economies of scale, but it also allows product diversification. As a result, the value chain within the cluster is being extended beyond the mere supply of semi-finished parts and components, but it also indulges into design and new product development. The fact that the industrial network is not client-specific, allows the network to carry out a variety of tasks aimed at creating competitive alliances. Furthermore, the cluster is composed of several layers of entrepreneurs, which acts as a 'training platform' for entrepreneurship. The main characteristics of the Muar furniture cluster are shown in Table 1.



Figure 1: Map of Malaysia

Location of Furniture Clusters: Muar ● , Klang Valley ● , Ipoh ● , Sg. Petani ●

Although the industrial integration within the Malaysian wood-based industry has been somewhat limited due to the state intervention practices, the Muar furniture cluster has been able to overcome this shortcoming. The establishment of a sawn timber depot in the nearby town of Batu Pahat ensures continuity in wood supply. Further, the supporting network of accessories and machinery suppliers have also expanded to an extent that the furniture cluster is more or less self-reliant in fulfilling its needs. Moreover, a private training institute established solely by the manufacturers ensures that skilled workers are trained to meet their requirements. In essence, the Muar furniture cluster has emerged as a model of success within the Malaysian wood-based industry, not only as a furniture production hub, but also as a training ground for potential entrepreneurs.

Table 1: Comparative Characteristics of the Muar Furniture Cluster

Feature	1995	2010
No. of Large Enterprises	15	39
No. of SMEs	197	383
No. of Skilled Carpenters	< 50	> 200
No. Tooling & Machinery Suppliers	n.a.	14
No. Fittings/Hardware Suppliers	1	6
No. Packaging Suppliers	2	9
No. of Finishing Centers	n.a.	6
No. of Finish Suppliers	3	11
No. Technical/Training Centre	n.a.	1
No. of Prototyping/Model Making Centre	n.a.	5

7. BENEFITS OF THE FURNITURE CLUSTER

The role of the Muar furniture cluster in the development of the Malaysian furniture industry cannot be downplayed. Many initiatives and programs have been put in place by the furniture cluster to ensure the continued competitiveness of the industry and among the notable programs:

- (1) The organization of the Export Furniture Exhibition (EFE), an annual furniture exhibition organized in simultaneously with the Malaysian International Furniture Fair (MIFF). The EFE charges a lower exhibitor's fee, which essentially caters for the many furniture manufacturers who are unable to bear the high exhibition cost incurred by participation in the MIFF. In recent years, the number of trade visitors to the EFE has increased significantly, and its sales have also doubled. In essence, the Muar furniture cluster has also formed a marketing platform of its own, to cater for the needs of its network members.
- (2) The furniture cluster also sets aside a sum of US\$ 5 million per annum to support collaborative applied research with research organizations in the country, which will offer technical support to the manufacturers.
- (3) The furniture cluster also holds regular dialog sessions among its network members to address issues of common interests as well as serve as a forum for information exchange. In fact, the dialog sessions also cover aspects, such as finance, marketing, inventory, product development, etc., all of which has a strong bearing on the competitiveness of the cluster.
- (4) The Muar furniture cluster serves as a training ground for potential entrepreneurs, and it has been reported that between 2005 and 2010, a total of 53 furniture entrepreneurs were created through the activities of this cluster. In some ways, the cluster not only provides employment to the local people, but also promotes entrepreneurial spirit among the local population, which in turn promotes further empowerment of the available human resource.
- (5) The furniture cluster also enhances the livelihood of the local community, as almost 63% of the local population in the area of Muar is employed directly or indirectly in the furniture manufacturing sector. In fact, the cluster serves as a large potential employer of the local workforce, which in turn improves living standards among the local population.

On account of this, it is apparent that the Muar furniture cluster has contributed significantly towards the development of the Malaysian furniture industry over the years, and its future competitiveness will also pave the way for the sustainable growth of the furniture industry in the country. The presence of industrial clusters within the wood-based industry has not only enhanced the industrial competitiveness, but also the resilience of the industry to face global challenges (Achibugi and Michie, 1997; Dunne, 2000; Ratnasingam and Thomas, 2008).

8. CHALLENGES FACED BY THE FURNITURE CLUSTERS

Among the challenges faced by the furniture clusters in Malaysia are:

1. The strong ex employer-employee loyalty exhibited by most sub-contractors which distorts competitiveness.

2. The focus on economies of scale production, which provides the lowest cost per unit, with little product diversification.
3. The low entry barriers into the industry have resulted in the presence of many sub-contractors who are essentially traders, creating intense domestic rivalry.
4. The value chain which is not extensive due to lack of diversification and innovation.

However, with the rapid globalization of the furniture industry worldwide, it is hoped that market forces will help shape sustainable industrial clusters for the future.

9. CONCLUSIONS

Despite the robust growth of the Malaysian wood-based industry in recent years, the competitive onslaught from other cheaper wood products producing nations in the Asian region may affect the competitiveness of the Malaysian industry in years to come. Nevertheless, the forest industry clusters, particularly the furniture clusters in the country, have created a competitive edge to face these challenges. The furniture cluster in the country has emerged as a self-sufficient industrial structure that not only contributes towards industrial growth and foreign exchange earnings, but also serves as a platform for developing potential entrepreneurs. Such an industrial development program is worth emulating in other countries to ensure a successful wood-based industry, both for the benefit of the people as well as the nation.

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DEVELOPMENT OF FURNITURE CLUSTERS IN MALAYSIA

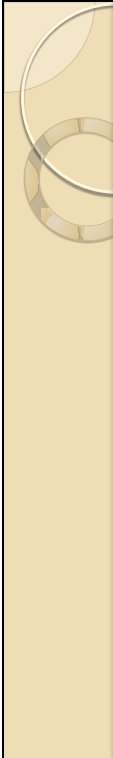
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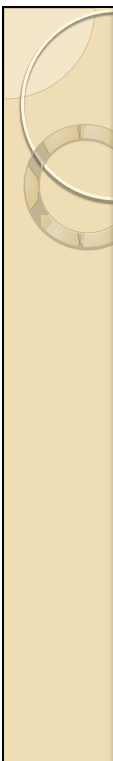
*Presentation at the conference "Rediscovering Wood – The Key to a Sustainable Future"
An International Conference and Exhibition on the Art & Joy of Wood,
Bangalore, India.
19 – 22 October 2011.*



INDUSTRIAL CLUSTERS IN PERSPECTIVE



- Industrial clusters throughout the world plays an important role in industrial development.
- Ample empirical evidence is available in support of this observation.
- In many nations in the developing world, industrial clusters are already at work in-directly.




- Industrial clusters have driven the rapid expansion of industrial outputs in many resource-based and labor intensive sectors in the developing world, such as the wood products sector.
- However, studies on industrial clusters in the wood products sector in this part of the world is lacking.



THE MALAYSIAN WOOD INDUSTRY

AN OVERVIEW

- 
- The Malaysian wood-based industry is one of the most important sub-sectors within the non-petroleum commodity sector.
 - It is second to the palm oil sector, and has replaced the rubber industry which has been a long standing economic powerhouse in the country.
 - It employs almost 347,000 workers and since 1985, the furniture sub-sector has emerged as the rising star.

THE MALAYSIAN FURNITURE INDUSTRY

IT'S DEVELOPMENTAL PHASE

Pre Industrial Master Plan Stage



The 1st Industrial Master Plan Stage (1986 – 1995)

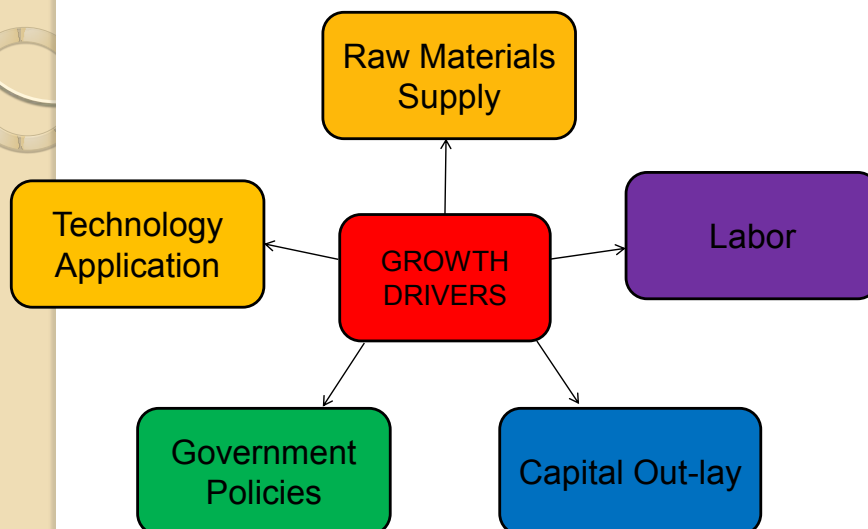


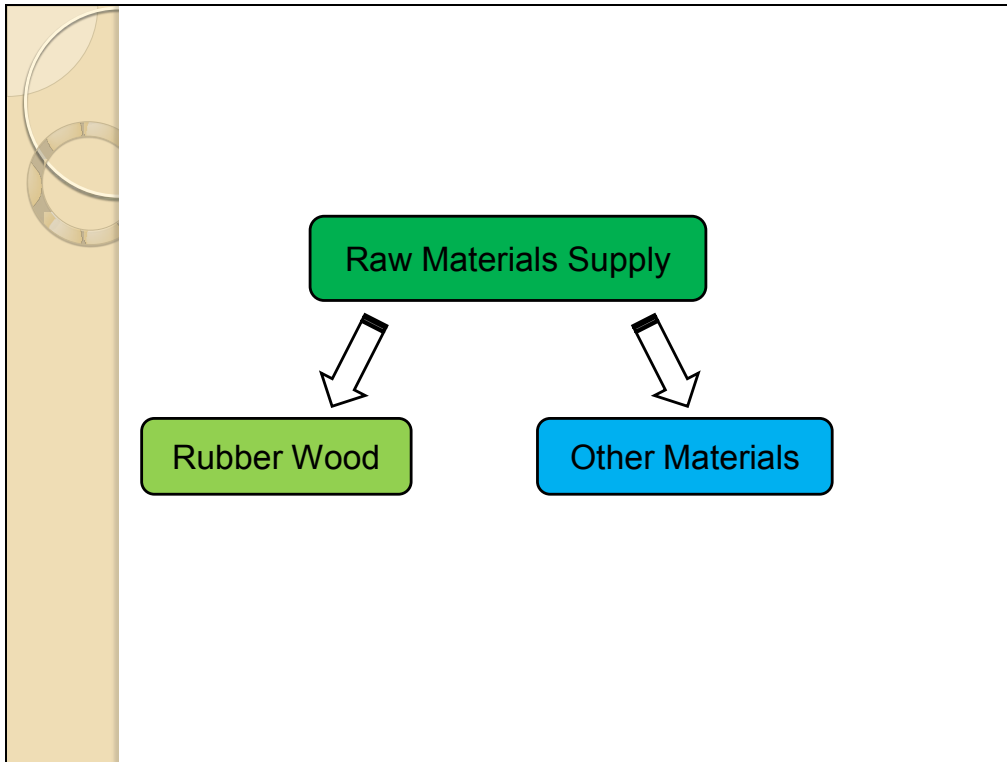
The 2nd Industrial Master Plan Stage (1996 – 2005)



The 3rd Industrial Master Plan Stage (2006 – 2020)

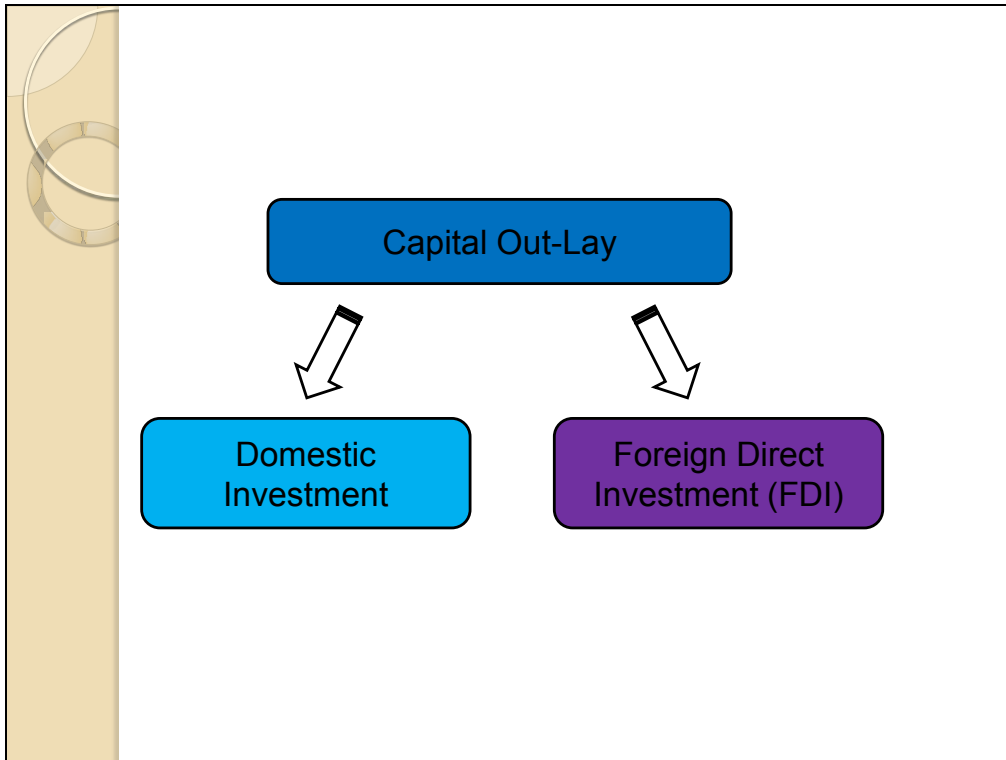
INDUSTRIAL GROWTH DRIVERS






Labor Force

- Workforce competition is increasingly stiff.
- 43% of workers are foreign-contract workers – highly mobile with low skills retention.
- Challenges faced with human resource development in the local scene.
- HRDF scheme aimed at training a pool of workers for the industry.




- Technology application is on the increase.
- Market size for technology absorption circa US\$ 50 million per annum.
- Net consumer of technology, little domestic development.

- 
- Government policies in support of industrial development.

1. Political and macroeconomic stability
2. Tariff protection
3. Financial incentives
4. Public deliverables
5. Infrastructure
6. Industrial estates



INDUSTRIAL STRUCTURE

- 
- Small and Medium Enterprises – 85% of the establishments.
 - Large Manufacturers – 15% of the establishments.
 - The top 50 manufacturers contribute almost 85% of total exports – skewed industrial structure.



CLUSTERS IN ACTION

MUAR FURNITURE CLUSTER

1. Close to the wood resource
2. Close proximity to Johor and Singapore ports
3. Large pool of experienced carpenters – family-owned with > 20 years experience
4. Supporting industries and facilities well established
5. Good Infrastructure

Comparative Characteristics of the Muar Furniture Cluster

Feature	1995	2010
No. of large Enterprises	15	39
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No. of Finishing Centers	nil	6
No. of Finish Suppliers	3	11
No. Technical/Training Centre	nil	1
No. of Prototyping/Model Making Centre	nil	5



Others Clusters / Furniture Villages

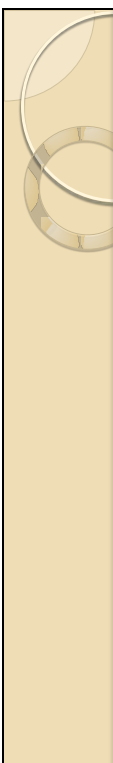
- Sg. Petani
- Ipoh
- Klang-Valley
- Bukit Rambai


- Ulu Yam
- Taiping
- Setiu



BENEFITS OF THE FURNITURE CLUSTER


- 
- The organization of the annual Export Furniture Exhibition (EFE).
 - The furniture cluster also sets aside a sum of US\$ 5 million per annum to support trade and marketing activities.
 - Well networked industrial hub.

- 
- The furniture cluster also holds regular dialogue sessions among its network members to address common issues:
1. Market potential
 2. Raw materials supply
 3. Labor issues
 4. Training needs
 5. Government liaison / industrial relation

- 
- Enhances the livelihood of the local community, where 63% of the available workforce is engaged in the furniture industry, directly or indirectly.
 - It is a training ground for future woodworkers.
 - It is a training ground for potential entrepreneurs.
 - It preserves the generation old tradition of woodworking.



CHALLENGES FACED BY THE FURNITURE CLUSTER

- 
- Strong ex employer-employee loyalty exhibited, which distorts competitiveness.
 - Focuses on economies of scale, with little product diversification.
 - Low entry barrier, creates intense domestic rivalry and supply elasticity for products.
 - Trading rather than manufacturing.
 - Value chain not well developed, lack of innovation and diversification.



THE FUTURE CHALLENGES



Raw Materials

- Very dependent on Rubberwood, almost 80% of all wood material consumption in the country.
- Production from natural forest expected to stagnate at about 8 million m³ per annum.
- Aggressive forest plantation schemes, yet to bear fruit!



Labor

- Interest in woodworking among locals relatively low – 3D syndrome.
- Low wage-economy – relatively 2.3% annual increment in wage – far below inflation rate
- Dependent on contract foreign workers – not sustainable!



Capacity

- Perhaps a case of too much milling capacity chasing after too little resource!
- Evident supply elasticity – price point downwards spiral.
- Capacity utilization not optimum.
- Reinvestment low.

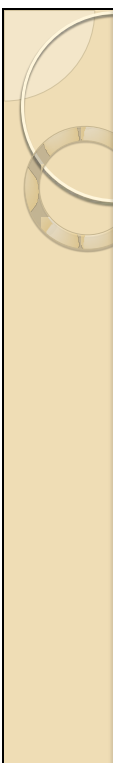


Policy Instruments

- Major force spurring the growth of the industry.
- However, facing limitation as industrial partnership is increasingly warranted but lacking!
- Innovation and creativity stagnating!



SUCCESS FACTORS IN THE FURNITURE INDUSTRY

- 
- Competitive inputs – materials
and workforce**
 - Competitive business
environment**
 - Stimulating and demanding
market forces**



Market accessibility

Relevant R & D

**Technology, innovation and
creativity drivers**



**Thank you very much for your
attention!**

Promoting technology based processing and utilization by the small and medium-sized enterprises (SME's) - the key to develop wood as a sustainable material in India

K Satyanarayana Rao²

Abstract

The main thrust of Indian forestry policy thus up until now has been towards increasing forest cover, conservation, protection and management. Technology based plantations have been receiving some attention in recent years, especially in areas outside forests, but very little attention is paid to technology-based utilization.

India is essentially a timber deficit country with huge and ever increasing gaps between supply and demand. It currently imports timber from over 30 countries despite its rich floral wealth that include about 4000 wood-yielding species. Of great concern is the very low level of uptake of scientific processing and utilization, especially in the large number of saw mills, and manufacturing units in the small and medium sized category (SME'S), which form the backbone of the wood industry consuming bulk of the timber. It is in these units that much of the initial mechanical processing, seasoning and preservation are carried out. Improper processing techniques and low degrees of modernization in machinery and equipment have resulted in low quality product output. More importantly, many of the alternate species identified as suitable for different end uses by R&D Institutes in place of the traditionally preferred species whose availability has dwindled, continue to remain un-or under-utilized. Exports have become negligible, despite the country being bestowed with such sought after and valuable timbers as teak, rosewood, mahogany, padauk, sandal redsanders etc.

The situation clearly warrants immediate remedial actions if wood is to be developed and projected as a sustainable material in India and its full value realized in the current global scenario and the emerging opportunities presented by the revival of interest in this most ecological of all the materials we have.

In view of the importance and strategic positions they occupy, it is held in this paper, that SME's in particular merit special and immediate attention and support. These include the much needed and long awaited enabling policy support, backed up by effective regulatory and legal frame works. As technology up-grading requires incremental investments that these units often find hard to meet, financial and material incentives as well as some 'hand-holding' arrangements are needed to be worked out through innovative partnership models.

Also, attention is drawn towards two notable recent developments, one relevant to wood processing and the other concerning upskilling of technical manpower. These are:(1) the supreme court orders (2002) that led to enhanced production of preservative treated wood in Andaman and Nicobar Islands and (2) the establishment of an Advanced Wood Working Training Center(AWTC) at the Institute of Wood Science and Technology(IWST), Bangalore through an innovative Institute-Industry International partnership model. There is a great

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scope and need for replication of such initiatives.

Keywords: plantation timber, technology – based utilization, processing, wood preservation, institute-industry partnerships.

1. INTRODUCTION

The economic, cultural, social, aesthetic and environmental values of wood have always been recognized and acknowledged by Indian society. Its usage has withstood competition from an array of other materials - both traditional as well as modern. As can be seen by mounting demand, wood usage is continually expanding, contrary to incorrect perceptions in some quarters. There have been innumerable studies on the requirements of timber and fuel wood. Reports/Year books periodically brought out by organizations like the Forest Survey of India (FSI, Dehradun), Indian Council of Forestry Research and Education (ICFRE, Dehradun) Food and Agriculture Organization, (FAO, Rome, Italy), International Tropical Timber Organization (ITTO, Yokohoma, Japan) etc. are invaluable sources of information on the demand, supply, trade and related aspects. From time to time, specially commissioned studies have also been undertaken (Bajaj and Bhat, 1996; Anon., 2000; Sushil Saigal et al, 2002; IPIRTI, 2003 etc). Although estimates vary as methodologies differ, all these studies point out that demand far outstripped local supplies long ago and is continually increasing across almost all categories of end-uses. In a study commissioned by the Ministry of Environment and Forest (MOEF), Government of India (GOI), on forest Industries, the consultants involved (ChemProject Consultants Private Limited, New Delhi), reported the requirements of round-wood equivalent (r.w.e) to be around 58 million cu.m (against a production of only 29 million) in 2000, which is expected to raise to about 153 million cu.m by 2020 (Anon., 2000). The figures are much higher if the needs of rural households and fuel wood are also considered (estimated to be around 700 million cu.m that includes 560 million for fuel wood by 2010 itself). The recorded timber removals from natural forest has declined to as low as 1.9 million cu.m (FAO, 2005) which forms a very small percentage of total consumption. At present, the country is meeting 50 percent of requirements from plantations. Import regulations have been liberalized since 1997 and have become an important source of supply.

The forest product scenario has been witnessing marked changes during the last two and half decades. These include changes in the species composition of the raw material, logging bans following Supreme Court orders of 1996 & 1997, liberalization of wood imports in 1997, increasing sustainability concerns, life style changes and new trends in consumption, compliance with the standards and terms of the International Agreements and Treaties. In a recent paper, Satyanarayana Rao (2011) dealt with some of these issues. In an earlier paper, he had also drawn attention on the changing role of Forest Products R&D Institutes in India (Satyanarayana Rao, 2003).

It is in this context that the present paper seeks to examine the main issues involved in promoting wood as a sustainable raw material and retain its prime position as a favoured material in the Indian ethos.

Considering the importance of plantation wood (agri – wood, JFM - wood, Juvenile wood, bamboo wood etc.) in the current and emerging scenario, and the imperatives of value added scientific processing and utilization, special attention has been paid to the factors involved in low levels of technology absorption – a matter of serious concern. Also presented are experiences with two recent initiatives relating to improved wood utilization, acclaimed by the industry and other stakeholders.

2. ISSUES INVOLVED IN PROMOTING WOOD AS A SUSTAINABLE MATERIAL IN INDIA

2.1 Enhancing the domestic resource base through plantations / afforestation

The National Forest Policy 1988, (GOI, 1988) envisages increasing forest / tree cover to 33% of the land area. Plantation activities have been one of the focal areas of Indian Forestry programmes right from the First five year plan (1951-56). These had been undertaken under various afforestation programmes like social forestry, farm-forestry, agro-forestry, energy plantations, national wasteland development and in recent years, participatory management programmes like the Joint Forest management (JFM). A 'Green India Mission' launched in 2011 is currently in operation. In order to realize the objectives of the National Forest Policy 1988, an additional 33.60 million ha. have to be brought under forest / tree cover to green 33% of the land area (estimates in 2008, Behari, 2008). This is truly a challenging task when it is considered that the cumulative area of forest plantations achieved from 1951 to 1999 (covering 9 five year plans) is around 31.20 million ha. Timber supplies to forest based industries have ceased from 1988 following government orders and major companies involved in paper / pulp production, plywood manufacturing and match-splint production have geared up to raise their own supplies through innovative arrangements on private lands. Their contributions to technology-based plantations, (especially clonal technology) have been commendable. Encouraging though these developments are, two aspects of the plantation programme are of concern/relevance to the wood industry. (1) In earlier times, plantations were intended primarily to meet industrial requirements and were largely mono-cultural. Since 1970's, timber production is only one of the multiple objectives of this programme. (2) Given the very nature of end-use requirements, plantations have more crucial contributions to make for the paper and pulp industry and certain types of panel products and match wood manufacturing in the short/mid-terms (10 to 20 years). The benefits can be expected to reach the large mechanical wood industries utilizing sawn-wood only after a much longer time.

2.2 Imports

With a view to reduce pressure on natural forests and to augment immediate supplies, the Government of India, as a major policy initiative, permitted wood imports by placing it under the 'Open General License' (OGL) category (which is called 'Free' now) in 1996. Since then, imports have been steadily increasing from 5.7 million cu.m during 2000-01 to 6.5 million cu.m by 2004-05, and has currently reached the 10 million cu.m mark (source: Director General of Commercial Intelligence & Statistics, Ministry of Commerce & Industry, Government of India). The wood is imported from about 40 countries, main consignments arriving from neighboring South-Asian countries (Myanmar, Malaysia, Indonesia as well as from Africa, New Zealand, Canada etc.). The bulk of imports are in an unprocessed form-mainly as logs, as the tariff structure does not favour the import of processed wood and wood products. While the imports increase, concerns over the National 'forest foot print' (at the exporting countries) are already being raised, which may lead to demands on utilization of 'certified timber' from sustainably managed forests. (Yadav et.al 2008; Manoharan 2007). India is also a signatory to the 'Sanitary and Phyto Sanitary Agreement (SPS Agreement of the World Trade Organization (WTO). Satyanarayana Rao and Rema Devi (2004) conducted a detailed study on the implications of this Agreement on the import of timber into the country and identified steps to be taken to comply with the standards specified in the SPS agreement. Usage of 'certified timber' and compliance with the provisions of SPS agreement might impact the price structure of wood supplies.

2.3 Technology generation (R&D) and Technology Absorption

India has a rich forest product research tradition dating back to 1906, when the Forest Research Institute (FRI) was established at Dehradun and is credited with quality research output on diverse aspects of wood properties, characteristics, processing, utilization etc. Research funding has improved in recent years, but still constitutes a very low percentage of allocations to the forestry sector. Besides the FRI (which has become a constituent Institute of the umbrella organization – the Indian Council of Forestry Research and Education (ICFRE, Dehradun) created on reorganization of the forestry Research in the country in 1988. Wood and forest product research is mainly pursued, apart from FRI, at the Institute of Wood Science and Technology (IWST), another ICFRE institute, the Indian Plywood Industries Research & Training Institute (IPIRTI), both located at Bangalore; the Kerala Forest Research Institute (KFRI) at Peechi, Kerala and the Central Paper and Pulp Research Institute (CPPRI) at Saharanpur, Uttar Pradesh. In addition to these Institutes, forest products and allied research is also being undertaken in a limited way, at the basic Science Universities, Engineering Colleges, Forestry colleges of Agriculture Universities, State Forestry Research Institutes etc., and in recent years, at the newly developed industrial laboratories in the private sector. A perusal of the achievements and progress made by these institutes (available as publications in scientific journals, periodicals, proceedings of seminars and conferences, annual reports, websites of the institutes, doctoral theses etc.), while reflecting the many ‘positives’ of the research part the programme, also indicate that important gaps exist in the ‘development’ part of R&D and more importantly, in the ‘Technology Transfer and Extension’ aspects. Research in marketing, social aspects and policy support have not received the attention they merit (Satyanarayana Rao, 2011). Even though the value of wood products is linked to quality, trendiness and aesthetics, design and finishing also did not receive the due attention as also product diversification. For instance, even though over thirty types of panel products are developed in the world market from bamboo, only a few are currently produced in India. As wood is increasingly being sourced from short - rotation plantations, several technological problems are required to be addressed specially during ‘processing’. Research / technological innovations needed for better utilization of such plantation sourced wood have been addressed in some recent documents like the National Forestry Research Plan developed by ICFRE, (NFRP-, (2000), reports of the National Mission on Bamboo Development (Anon., 2003a), Greening India through agro – forestry and JFM (Anon., 2003b) and in other publications (Bhat et.al 2008; Pandey et.al 2006).

It is a matter of serious concern that in spite of past and on-going efforts, the level of technology absorption has remained very low. Even well tested and easily available technologies are not used efficiently. The status of usage of treated wood and preservatives is an example of the glaring gap that exists in technology generation and utilization. India has developed some world renowned wood preservatives like the ‘Copper – Chrome – Arsenic (CCA)’ patented as ‘Ascu’, ‘Copper – Chrome – Boric (CCB)’, several treatment methods, besides generating impressive data on aspects like treatability (for over 100 species), durability (on land and under marine conditions - for over 300 species), in addition to devising various schedules for treatments etc. The International Research Group on Wood Protection (IRG), Sweden and other scientific bodies recognize preservative treatment as a strategy for ‘tree- diversity conservation’, ‘waste – minimization, and of late, as a mechanism to achieve higher ‘carbon lock-in-periods’. The United States of America (U.S.A) with a population of some 310 million is reported to be using over 50,000 tons of CCA alone, annually. In contrast, the sale figure from India (with a population of about 1.2 billion) of all preservative formulations put together, worked out to be just 2120 tons of CCA equivalent in

2000 indicating how far the absorption of this technology lags behind (Indra Dev and Bhojvaid, 2004). The situation becomes even more discouraging when it is considered that despite indications of internal rate of returns of up to 175 % on cost incurred (Bajaj and Bhat, 1996), simple, on-site, prophylactic treatments are also not undertaken even by high profile companies and departments. It is estimated that above 20-30% of harvested material is lost during transit or storage and it is not uncommon to see timber and bamboo decaying at the felling sites (forest floors) or at the mill sites (Kumar and Indra Dev, 1993).

The gap between generation, availability and absorption of technologies, though not of the same scale as in the case of wood preservation, is nonetheless conspicuous in other areas of wood technologies. All this leads to output of improperly seasoned, inadequately preserved timber, low recovery in sawmills, little value addition, low quality products and more importantly in the Indian context, non-utilization of a number of 'secondary' or 'lesser-known' species which have been found suitable by research for different end-uses, after following the recommendations. At present, even when such hitherto under-utilized species are put to use, recommendations are seldom followed.

While growing concerns over such negative consequences are expressed, effective mechanisms to remove the obstacles in technology transfer have not been evolved. Very few studies, in fact, have focused on understanding the impeding factors and offer solutions. Some of the recommendations aimed at improving the technology transfer scenario include: greater attention to development of product oriented technological packages and adoption of 'cluster approaches' at the Institute level, increasing inter-institutional co-operation to synergize the strengths, and more importantly, conduct research and develop tools to gain a better understanding of the ability of the users to absorb technologies (John Joseph, 2006; Katwal, 2004; Satyanarayana Rao 2003, 2011).

2.4 Wood industry, importance of 'processing' and the need to support Small and Medium sized Enterprises (SMEs)

Domestic trade of timber and other forest products is on a very large scale, but, due to lack of reliable data, is not properly reflected in the contributions of the forestry sector towards the Gross Domestic Product (GDP) (Behari, 2008). Trade is carried out at both the 'formal' (Industry) and 'informal' (Community) levels. The 'formal' industrial sector consists of two broad groups. All industrial units registered under section 2(m), and 85 of the Factories Act are considered as 'organised' sector. The 'unorganised' sector consists of units registered as 'small-scale' enterprises as well as all other unregistered units from the 'informal' category, operated by artisanal craftsmen, carpenters, traditional fishermen involved in manufacture of catamarans and various other types of fishing boats, toy manufactures etc, usually operating at the village level and producing subsistence products.

'Processing' is the dominant segment of the wood Industry, occupying a strategic position in 'promoting efficient utilization, thereby lending support to sustainable management of wood resources'. The benefits of sound practices in processing multiply as the processed wood moves downstream, stimulating a whole range of supporting activities and even other industries. In India, most of the mechanical wood-processing/seasoning, preservation, saw-milling etc is carried out by the large number of smaller units in the SME's category. Apart from the critical role they play in the technical aspects of utilization, they also contribute significantly to the broader social issues of generating employment to a large work force.

Development of the domestic wood processing sector is vital for the growth of the wood industry and its sustainable development. This assumes even greater significance in light of the fact that India is presently perceived to be rather poorly placed in the common 'ease of doing business' indices affecting investments. However, experience from other tropical countries suggest that 'successful processes are not created overnight' and have to be developed in phases. If nurtured properly, the processing industry can be even developed to become the designated managers of the planted wood resources (Tissari 2002; Tissari and Jaaskelainen, 2008).

Successful countries in plantation based industries have developed policies and sets of incentives to promote the growth of the processing and manufacturing industries. The phenomenal expansion of the furniture industry in Malayasia in the recent past has often been attributed to the enabling policies and abundant financial incentives provided to them. The government-led schemes such as offering of 'pioneer status', providing re-investment allowance, infrastructure and training allowance etc., have stimulated the local industry as well as attracting foreign investment. India could perhaps benefit from such examples and adopt appropriate measures to enable the wood processing industries to realise their potential.

Value added processing of the type required to utilize the increasing supplies of short rotation and small dimensioned plantation timber necessitate investments for upgrading of machinery and equipment and scaling up of operations. The units falling under the SME category in particular, already operate under challenging conditions with limited financial resources and require immediate support.

2.5 Markets

Wood is always in great demand in India. The Chemprojects study cited earlier (Anon., 2000) recognized 19 categories of end-uses for which a market already exists and the list is expanding with changing life styles and increasing incomes. The main focus has already shifted to more down-stream, scientifically processed and value-added products. Great scope exists for product diversification that can lead to increased market-created (creation of demand for new products) activity apart from the current market-led activities. This is, however, possible only with greater infusion of technology at various stages of operation, especially processing. The level of technology absorption has to be considerably scaled-up. 'Catching up' technologies may have to be imported where necessary. 'Technology leapfrogging' has been advocated to help the wood forest product sector to realize its potential. 'Certified' and 'eco-labeled' wood, and 'carbon credits' by achieving longer lock-in periods are seen as emerging opportunities in the world market. As of now, India does not have a certification scheme of its own. Only one forest certification (for rubber plantation in Kerala) and 4-chain of custody certifications (two in Jalandhar, Punjab, one each in Delhi and Mysore, Karnataka) have been reported in 2008 (Yadav et al 2008). A few other certifications are currently under way. As the carbon exchanges and certifications agencies are in the rich developed countries, the cost of availing their service is very high and cannot be availed unless operated on a scale to afford the cost (Chundamannil, 2008).

However, immense opportunities exist for developing quality products for high end- niche markets as the country is blessed with a large number of about 1500 tropical timber species in its floral wealth – some of them valued very highly in the international market – like teak, rosewood, mahogany, red sanders, sandal, padauk etc.

2.6 Policy and Institutional Frame Work

The main thrust of the policies of the Indian Forestry since the 1980s had been on increasing tree/ forest cover its conservation, protection and management. The National forest policy, 1988 (GOI 1988) has mentioned ‘development of substitutes to replace wood and wood products’ as one of the priority areas for R & D with a view to ease the pressure on wood resources which has led to some confusion and mis-interpretation as the policy also identified ‘utilization’ as another priority area. Subsequently developed programmes like the NFAP (1999), NFRP (2001), National Mission on Bamboo Applications (NMBA), Green India Mission (2011) etc. contain several projects and initiatives to promote utilization of planted wood, bamboo, canes, wood from non-forest areas as well as other ligno - cellulosic materials (for especially board production). The Bhopal-India (B-I) process a National initiative for developing criteria and indicators (C & I) for sustainable management of forest – initiated by the Indian Institute of Forest Management (IIFM), Bhopal, and revised in 2005 adopted ‘optimal utilization of resources as its 6th criteria (out of 8). While these are welcome developments, a road map is yet to be developed to achieve ‘technology-based utilization’ on the lines of the issue of ‘technology based production’. It is interesting to note in this context, that even during the time when ‘production forestry’ was encouraged, the focus was always on the ‘how much is produced and removed aspects’ rather than ‘how’ it is actually used.

The timber industry in India is mostly in the unorganized sector. For instance it has been reported that 95 percent of the furniture and joinery produced in the country is in the craftsman sector (Gauri Ramakrishnan, 2004). There is no effective regulatory framework to monitor/ guide the industry. Incentives of the type provided in countries like Malaysia, are not available to the industry in India. The existing felling and transit rules as well as export / import regulations are seen as ‘disabling’ rather than ‘enabling’, by the Industry. An urgent need therefore exists for evolving a ‘National wood use policy’, with a focus on ‘promotion of technology-based processing and utilization’, which is voiced at several fora.

As can be seen from the forgoing account, a favourable operational regime for wood forest product sector does not currently exist in India. The situation clearly calls for innovative, even out-of-the box approaches and enabling governmental actions. Two developments in the recent past that have been acclaimed by the Industry as well as other stake holders merit special mention in this context. These are: (1) The supreme court orders of 07.05.02, based on the reports of a single member (Shri Shekhar Singh) commission on the “status of forest and other allied matters in Andaman and Nicobar Islands (ANI), “in a case relating to protection of forests of Little Andaman Island, that have led among other things, to increased production and sale of only treated timber in the A&N Islands. The wood preservation industry welcomed this decision and feel that such steps are needed to be taken by other states as well (Agarwal, (2004). (2) The setting up of an Advanced Wood Working Training Centre (AWTC) at IWST, Bangalore through an innovative industry-institute-international partnership model. This centre was developed as a joint project of ACIMALL (the Italian wood-working machinery and tools manufactures association, Milan, Italy), ICE (the Italian trade commission, an organization of the govt. of Italy which promotes Italian technology and products in different countries, and IWST, Bangalore (an R&D institute of ICFRE), in 2003. Details of the aims of the centre, its functioning and progress can be found in the website of the institute. ([http:// iwst.icfre.gov.in](http://iwst.icfre.gov.in)). Satyanarayana Rao (2004, 2011) dealt in detail the benefits of developing such public-private partnerships and innovative approaches to the wood industry in India.

3. CONCLUSION

India is a timber hungry country suffering from a timber deficit. The unmet demands on industrial timber and fuel wood have been well documented and are ever increasing. 'Producing industrial timber at an acceptable cost while promoting the critical environmental values' is a key challenge to Indian Forestry, as mixing of 'market' and 'non-market' objectives creates incompatibilities difficult to solve (Ganguly, 2000). The Government has embarked on a massive / afforestation / plantation programme in both Government and private lands to achieve the national objective of greening 33 percent of land area with tree/ forest cover. However, it is to be realized that this programme has multiple objectives. Given the nature of end-use requirements, benefits from this programme cannot be expected to reach the industry, especially the very large mechanical wood processing sector in the short (10 years) or mid-term (20 years). To meet the immediate demands, India has also liberalized its import regulations on wood since 1997. Although steadily increasing, imports may face problems on account of growing concerns over 'forest foot prints' (which may lead to demands for use of certified wood) and to follow global protocols required by international agreements like the SPS Agreement of the WTO. Both these may impact the pricing of imported timber.

In this scenario it is increasingly becoming clear that the promise, potential and opportunity for the wood product sector cannot be realized unless scientific utilization is promoted through the application of sound technologies, on a priority basis. Unfortunately, absorption of wood technologies is proving very complex, impeded by many factors. Some of the areas for improvement are presented and discussed in the paper. It has been noted that catalyzing and enabling the industry especially the processing segment holds the key to achieving technology-based sustainable utilization, as experiences from other developing countries with successful plantation based industries indicate. Processing is mostly carried out in India by a large number of SME's. In view of the strategic position they occupy, and considering the fact that they often operate under challenging conditions with limited financial resources, these units merit special attention for support.

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PROMOTING TECHNOLOGY BASED PROCESSING & UTILIZATION BY SME'S – THE KEY TO DEVELOP WOOD AS A SUSTAINABLE MATERIAL IN INDIA

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WOOD USE IN INDIA

- Economic, Cultural, Social, Aesthetic & Environmental values of Wood well recognized and imbibed in Indian Ethos
- Usage widespread, extensive and ***continually expanding***
- Demands across all categories of wood use far outstripping local supplies

ISSUES IN DEVELOPMENT OF WOOD AS A SUSTAINABLE MATERIAL

- Enhancing domestic resource base
- Augmenting supplies through imports
- Achieving resource efficiency in manufacture and use

ENHANCING DOMESTIC RESOURCE BASE

- Plantations/ Afforestation programmes
 - Massive target: about 33.60 m. ha. need to be brought under forest/tree cover
Area brought under all forest plantation programmes during 1951-1999: 31 m. ha.
- Benefits to reach only a few segments during short and mid-terms

WOOD IMPORTS

- Liberalized since 1996 (Placed under OGL)
- Steady increase
- Imports from about 40 countries

CONCERNS

- National forest footprints
- Demands for usage of "Certified Wood"
- Compliance with provisions of SPS AGREEMENT of the WTO

What Will Be The Cost ?

RESOURCE EFFICIENCY IN MANUFACTURE AND USE

- Technology generation and utilization
- R & D**
- Many positives
 - Century old forest product research tradition
 - Network of Research Institutes
 - Impressive research output
 - Several world class innovations

Contd ...

RESOURCE EFFICIENCY IN MANUFACTURE AND USE (Contd ..)



- Huge gaps between research output, availability of technology packages and technology absorption

- Are the problems entirely technological ?
- To what extent are we applying/utilizing available technologies ?

Contd ...

RESOURCE EFFICIENCY IN MANUFACTURE AND USE (Contd..)

- Technology transfer – the weakest link

Impeding Factors

- Lack of perception of the ability of target groups to accept technologies (Social technologies, tools to be developed)
- Lack of adequate means

CHANGING ROLE OF R&D INSTITUTES

- Increased attention to development of technology packages— “cluster approaches”
- Development of products relevant to needs of people – changing lifestyles, slick designs
- Keeping pace with shifting focus
 - Economic dimensions → Energy savings → Carbon – emission reducing “green technologies”

Contd ...

CHANGING ROLE OF R&D INSTITUTES(Contd ..)

- Undertaking “Life Cycle Analysis” (LCA) studies of wood products to highlight environmental advantages and capture emerging global opportunities
- Greater emphasis on Market, Policy and Social aspects in research

ENABLING INDIAN WOOD INDUSTRY

- To achieve greater output of well processed timber for downstream uses and quality products by creation of a favorable operational regime
- Processing segment merits special attention and support as Indian industry is increasingly becoming plantation dependent

Contd ...

ENABLING INDIAN WOOD INDUSTRY(Contd..)

- **Strengthening SMEs : a priority area**
- They carry out bulk of mechanical wood processing
- Occupy a strategic position to lend support to sustainable management of wood resources through promoting efficient utilization
- Employ a very large workforce
Nurtured properly, can be developed as “designated managers” of planted wood resources(*Tissari*)

ENABLING INDIAN WOOD INDUSTRY(Contd..)

- Current scenario at the SMEs
 - Low levels of technology application
 - Low recovery in saw mills, wastage
 - Low output of improperly seasoned/preservative treated timber
 - Non-utilization of large number of secondary timbers – Leakage of research effort
 - Low quality products even from high value timbers
 - *Technological upgradation – the urgent need*
- ***Constraint: Inadequate resources***

POLICY, INSTITUTIONAL FRAMEWORK AND SUPPORT

- Increasing “forest/ tree cover” , conservation, protection and management : thrust areas of the policy since 1980s
- Importance of “utilization”, although recognized in the national forest policy as well as in the “Bhopal – India” process, a roadmap to achieve rational utilization yet to be put in place
- Focus so far has been on supply side aspects.

CONCLUSION

- *Achieving "technology – based" utilization: a key challenge in promoting wood as a sustainable material*
- *Innovative approaches needed to foster partnership models, technology leap-frogging where necessary and providing support to all stakeholders*
- *Need to develop a "National Wood Use policy"*

Thank You

The Struggling Chinese Woodworking Industry: Challenges and Solutions

Shengfu Wu³

Abstract

After thirty years of development, the China Woodworking industry now boasts the highest capacity of any country worldwide. The Chinese market has also become the largest in the world and has attracted global suppliers. Due to the world economic crises, both the domestic and international markets have shrunk and the manufacturers are struggling for survival. Local timber as the raw material supply has changed from nature forest into plantation forests. Legally harvested imported timber is a key issue for future development. The quality of Chinese woodworking products is well regarded by the world market. Much focus is now placed on the future of the woodworking industry and the issue of how factories can survive and continue to meet market requirements.

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The Description of Marketing Mix at Three Level Furniture Industries in Medan area, North Sumatera, Indonesia

Arif Nuryawan⁴, Iskandarini⁵, Vera Sylvia Nainggolan⁶

Abstract

The research objective was to describe the marketing mix of the furniture industry on three different levels (small, middle, and big), focusing on the 4 Ps of marketing; product, price, place, and promotion. The results showed that:

1) For small enterprises, the products were teak furniture, handicrafts, and guest chairs, with prices ranging from IDR 400.000 – 6 million. The distribution channel involved producers, industrial users, and consumers. Promotion was through exhibition at Pekan Raya Sumatera Utara (North Sumatera Fair)

2) For mid-sized enterprises, the product was grovel furniture and replica furniture (sofa and kitchen set). The price for grovel furniture was between IDR 16-20 million. Because of the expensiveness, grovel furniture did not sell well. The price range for replica furniture was lower, from IDR 10-13 million. Distribution was direct between producers and consumers, without the involvement of agents. Promotion was carried out through commercial advertisements in internet and magazine.

3) For large enterprises, the most expensive product were bedroom sets, costing IDR 50 million. The cheapest product were door frames, at IDR 900.000. The distribution channel included producers, agents and wholesaler (industrial distributor to industrial consumer user). Promotion necessitated looking actively for the clients.

Keywords : furniture industry, marketing mix

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1. INTRODUCTION

Back ground

The development of timber industries in Indonesia began in the 1970s with the export of logs. In the 1980s, after the Indonesian government prohibited the export of logs and sawn timber, there was significant growth in both the primary and secondary wood industries in Indonesia. The primary wood industries include sawmills (Pari, 2002) which convert logs into lumber. The secondary industries are wood enterprises which convert lumber into wood products, both half-finished products (such as beam, board, rafter and lath) and finished products (such as frame, window, sash, door, cupboards, desks and wood chairs) (Simarmata, 2009).

Furniture is a wood product that fulfils household needs and furnishes the home (Hero et al., 2008). In the United States, the furniture industry is the largest user of hardwood lumber, and includes the following subsectors: household furniture, office furniture, public building furniture, partitions & fixtures, and miscellaneous furniture & fixture (Koch, 1977). In 2005 furniture exports reached US\$ 1.78, billion comprising 75% wooden furniture (Kasmaliasari et al., 2009).

Furniture can be produced not only by small-middle enterprises but also by the big industry. In Medan, the largest Indonesian city outside Java, furniture is manufactured by artisans, “panglong” (the term of wood small-middle enterprise), wood industry, and manufacturers of wooden products. Therefore, furniture (moulding and wooden furniture) is classified as a first class commodity (Medan Trading and Industry Service, 2011).

In this research the marketing mix was investigated at three different levels of the furniture industry; small, middle, and big. The marketing mix is a strategy aimed at increasing market share (Kotler, 1998). This research focused in “4P” (products, price, place, and promotion).

Objectives

- To determine the marketing mix at small enterprise (case study at UD.Putra Kalingga)
- To determine the marketing mix at middle enterprise (case study at CV.Karya Kasih)
- To determine the marketing mix at big industry (case study at PT.Elang Tenaga Bersama)

2. METHODS

Data collection on furniture industries was carried out by use of surveys. The first step taken in data collection was conducted using sampling, and was based on both the legal status of the enterprises/ industry and on raw material from solid wood.

- UD: Putra Kalingga represented small enterprise. UD (“Usaha Dagang”) is a trading business in the wood industry, it usually called “panglong” or “artisan”.
- CV: Karya Kasih represented middle enterprise. CV (“Commanditaire Vereniging”) is Dutch terminology for the middle trading of wood and wood products. Both UD and CV have no legal status.
- PT: Elang Tenaga Bersama represented big industry. PT (“Perseroan Terbatas”) is the legal status of the firm.

The second step, interviewing the manager/ owner was conducted using a questionnaire. The main parameters of marketing mix were as follow:

- Products: defining the variety of the products, form, and design making up the three levels of the furniture industry. Some tools are used, such as: questionnaire, camera, and stationery.
- Price: collecting information on decision making for pricing strategies of furniture products. Identifying the total cost to the owner/ manager during interview.
- Place or distribution: identifying the location and distribution channels of the furniture industries.
- Promotion: understanding how the industries communicate the products to public. This includes advertising, personal selling, exhibitions, sales promotions, or marketing.

The third step consists of identifying supporting parameters, furniture production processes and the raw materials. The final step involves analyzing the data using either description analysis or inductive analysis.

3. RESULTS AND DISCUSSION

A previous survey (Sitorus, 2009) stated that 164 “panglong” units (small / mid-sized enterprises in the field of wood) were operating in Medan for 30 years. As Simarmata (2009) states that only 50% of “panglong” have their own machine for manufacturing wood products, the actual number of those owning machines is around 82 units.

Small Enterprise

UD Kalingga used sawn timber from suppliers as a raw material. The species of wood was varied and the machinery used was simple and low-tech. One of the identified species was teak wood (*Tectona grandis*). Teak is known as “the king of wood” and the majority of consumers understand the high quality, performance, and aesthetic value of Teak (Buckley, 2010).

Production process showed at Figure 1.

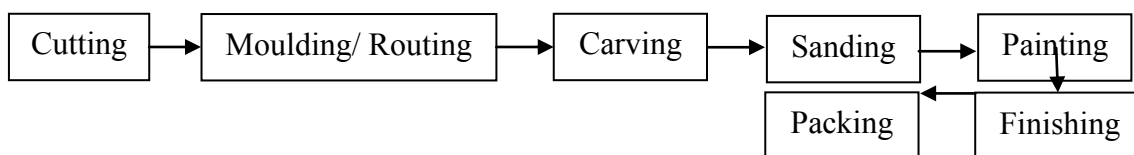


Figure 1. Production process of furniture making at UD.Kalingga

Products and price

Furniture design is one of the important aspect attracting consumers particular products (Kasmaliasari et al.,2009). At UD Kalingga, furniture design can be classified as simple (minimalistic) and classic design. UD Kalingga’s products are shown in Figure 3 and the price list is shown in Table 1.

Table 1. List products and the price list

No	Item	Price (IDR)*
1	Guest chairs	4-6 millions
2	Rectangular table	400.000
3	Oval table	500.000
4	Dining set	750.000
5	Relax chair	1.000.000
6	Cupboard	900.000

Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000

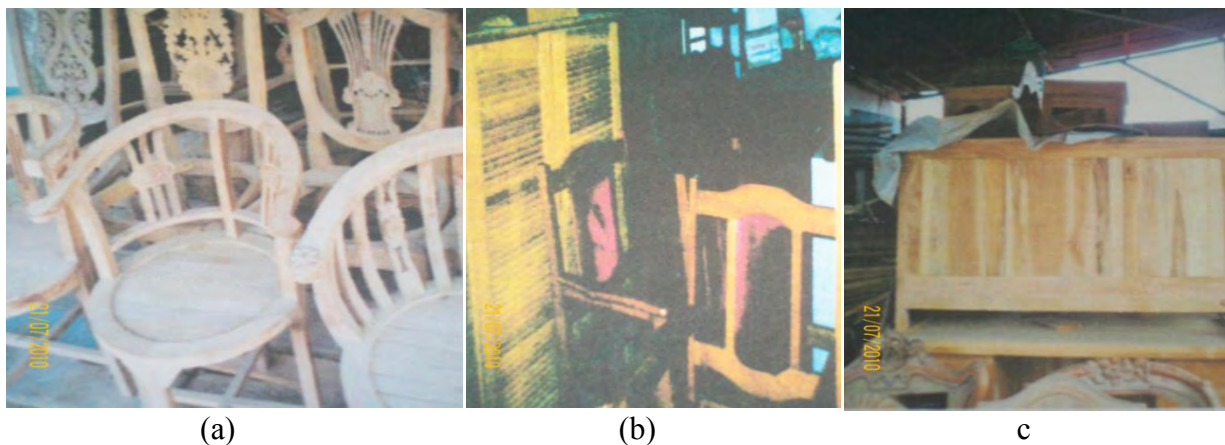


Figure 3. UD Kalingga's products (a) guest chairs (b) dining set (c) cupboard

Place or distribution

The distribution channel involves producers, industrial users and consumers. Promotion was through exhibition at Pekan Raya Sumatera Utara (North Sumatera Fair) (Figure 4)



Figure 4. North Sumatera Fair
(Source : Government of Medan City, www.pemkomedan.go.id)

Middle Enterprise

CV Karya Kasih used commercial timber as raw material. The species identified were meranti, pinus, and teak. The machinery was relatively modern. The production process is illustrated in Figure 5.

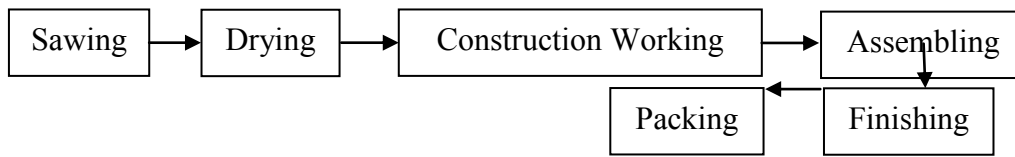


Figure 5. Production process of furniture making at CV. Karya Kasih

Products and price

At CV Karya Kasih, the furniture design can be classified as elegant, simple (minimalistic), futuristic, and classic design. CV Karya Kasih's products and price list are shown in Table 2

Table 2. List products and the price list

No	Item	Price (IDR)*
1	Grovel furniture	16-20 millions
2	Replica furniture	10-13 millions

Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000

Grovel furniture (Figure 6) is usually made by request/ order. As it has very high levels of durability the price is also usually high. Because of its cost, this furniture does not sell in large quantities. Replica furniture (Figure 7) consists of office school furniture, sofa, and kitchen sets. The price of office school furniture ranges from IDR 10-13 millions while kitchen sets are roughly half the price, with a range of 6-8 million.

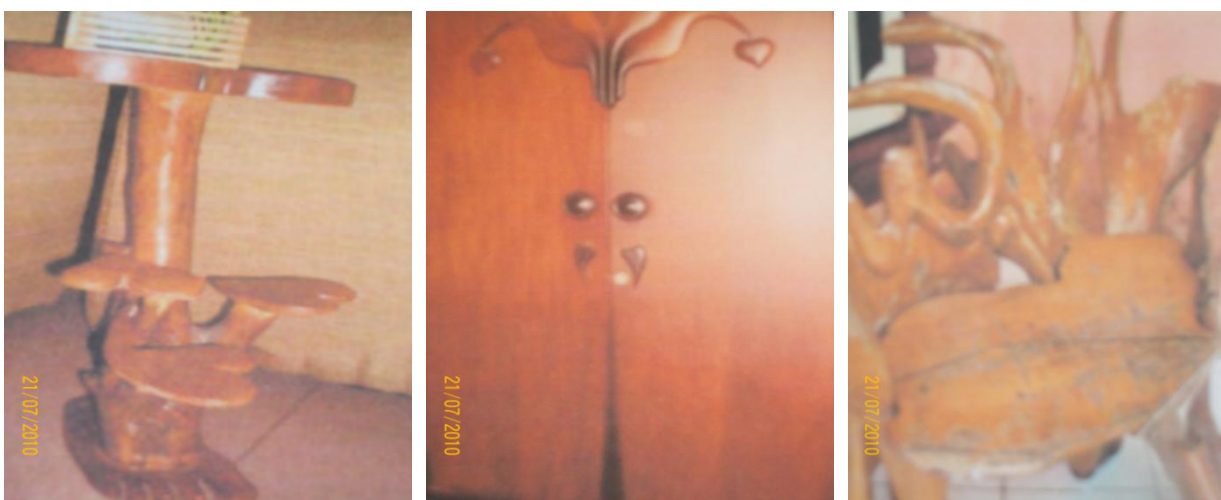


Figure 6. Grovel furniture made of CV. Karya Kasih



Figure 7. One of replica furniture called office school furniture made of CV.Karya Kasih

Place or distribution

The distribution channel links producers directly with consumers without the involvement of agents. Promotion is done by commercial advertisements on the internet (Figure 8) and in magazines.

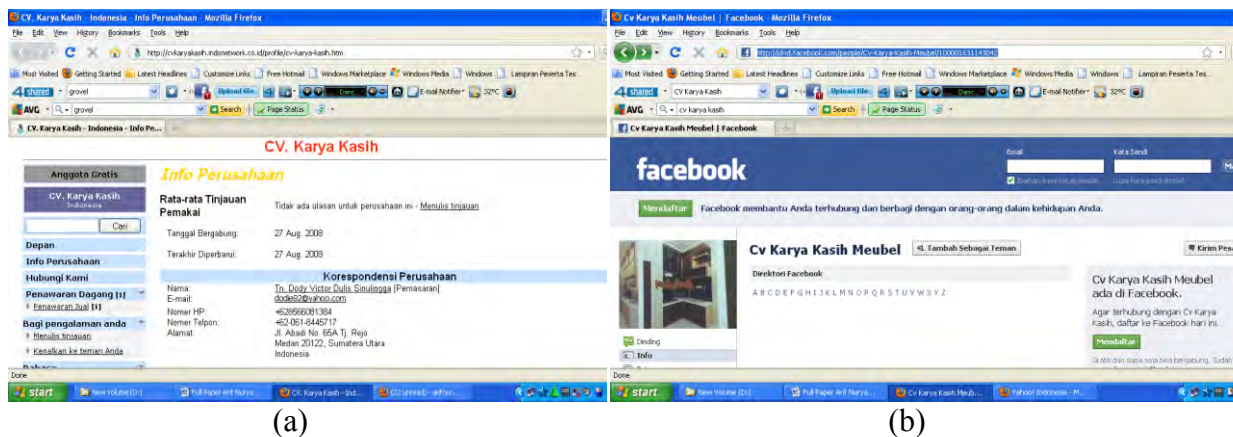


Figure 8. Free advertisements using website of CV.Karya Kasih⁷ and Facebook⁸

Big Industry

PT Elang Tenaga Bersama used sawn timber and logs as the raw material. The species identified were pinus (*Pinus merkusii*) and rubber wood (*Hevea brasiliensis*). Market exports mostly come from East Asia as consumers from this region (eg Japan and Korea) prefer light wood rather than wood. This condition is different from in Jepara. Jepara's furniture industry uses teak and mahogany - both of which are dark – as the raw material (Yovi et al., 2009).

Modern machinery allows large scale production and continuous processing, enabling the products to all have same standard in quality, quantity, and type.

Products and price

⁷ <http://cvkaryakasih.indonetwork.co.id/profile/cv-karya-kasih.htm>.

⁸ <http://id-id.facebook.com/people/Cv-Karya-Kasih-Meubel/100001631143042>

At PT Elang Tenaga Bersama, the furniture design can be classified as elegant, simple (minimalistic), oriental, futuristic, and classic. PT Elang Tenaga Bersama's products (Figure 9) and the price list showed at Table 3

Table 3. List products and the price list

No	Item	Price (IDR)*
1	Bedroom set and sofa	50 millions
2	Door frame	900.000
3	Cupboard	3 millions
4	Dining set	12 millions
5	Guest chair	9 millions

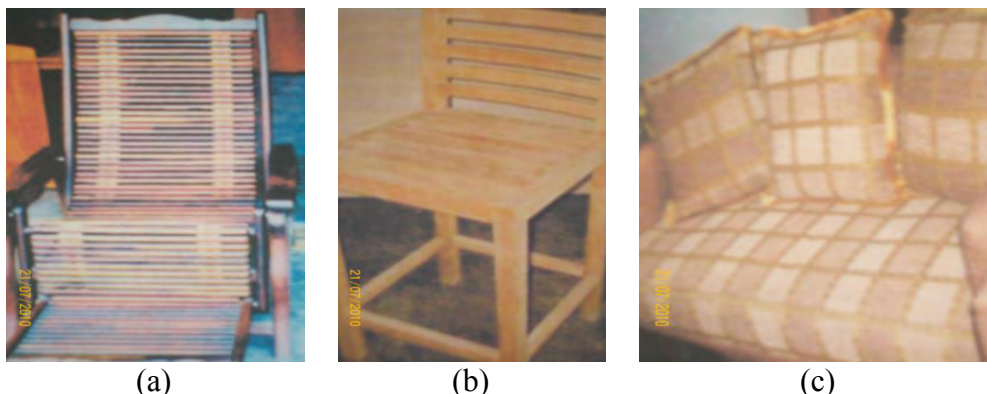
Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000

The most expensive product was the bedroom set, with a price of IDR 50 million. The cheapest product was the door frame, with a price of IDR 900.000.

The distribution channel includes producer, agents and wholesaler (industrial distributor to industrial consumer user). This is relatively uncomplicated when compared to Jepara as the center for wooden furniture industries in Indonesia. The Jepara wooden furniture marketing channel has five common channels (Kasmaliasari et al., 2009) : 1) artisan – exporter + warehouse – export 2) artisan – showroom + finishing – consumer 3) artisan – collector/broker – showroom + finishing – consumer 4) artisan – collector/broker – showroom outside Jepara – consumer 5) artisan – broker + finishing – showroom outside Jepara – consumer.

The promotion was carried out using both active and passive methods. Looking for the clients and hiring of marketing officers are active, while partaking in an exhibition at PRSU is passive.

Figure 9 below, shows the products made of PT.Elang Tenaga Bersama.



**Figure 9. Chairs Product made of PT.Elang Tenaga Bersama
(a) guest chair (b) dining chair (c) sofa**

4. CONCLUSION

Data taken from this research indicates that UD Putra Kalingga is classified as a small enterprise, the products are very competitive in the market because of their low price. Therefore, price is the most important factor in the marketing mix in this industry.

In a mid-sized enterprise, in this case CV.Karya Kasih, most of the products are manufactured based on orders from consumers. Promotion is done repeatedly, through the internet (both websites and social networking). Therefore, promotion is the most important element in the marketing mix in this industry, as it is essential to receive orders from consumers.

An example of big level furniture industry was PT.Elang Tenaga Bersama. This industry was already stable. All of the components of marketing mix – products, price, place, and promotion- have played the same important rule to this business.

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THE DESCRIPTION OF MARKETING MIX AT THREE LEVEL FURNITURE INDUSTRIES, IN MEDAN AREA, NORTH SUMATERA, INDONESIA

by

Arif Nuryawan, Iskandarini, Vera Sylvia Nainggolan

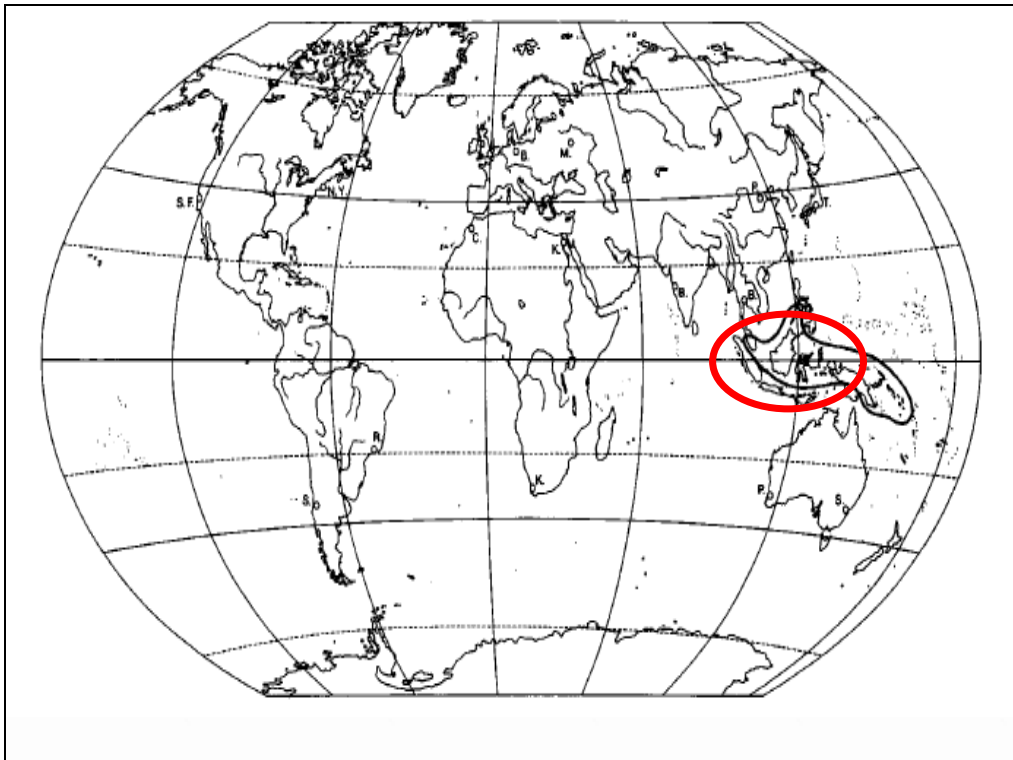
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Presented in



Rediscovering Wood: The Key to a Sustainable Future

An International Conference and Exhibition on the Art and Joy of Wood
19-22 October 2011, Bangalore, India



INDONESIA



Medan, North Sumatera



- Medan is the biggest city outside Java
- Medan is the biggest city after Jakarta and Surabaya
- International airport (Polonia)
- University of Sumatera Utara

INTRODUCTION

• Development timber industries in Indonesia

1970s

- Begun by log export
- Log came from natural forest

1980s

- Government prohibited the export (log & sawn timber)
- Plywood industry became popular
- Secondary wood industries grew (start used mixed raw material)

now

- Changing in wood supply from natural forest to plantation forest
- Panel products became popular (particle board & fiberboard)
- Secondary wood industries relatively stable

Data calculated from

Ministry of Forestry Republic of Indonesia (2008).

- Logs production reached 31.4 million m³ in 2007 and during the last 5 years the logs has been supplied about 60 % from plantation forest, it is different from the years before 2000 whereas the logs was mostly supplied from natural forest.
- The changing of logs supply from natural forest to plantation forest brings the changing of wood species, logs diameter, wood maturity, and wood characteristics consequently, and this phenomenon also brings wood industry changing in
 - **kind of products**
 - **handling and processing of raw materials**
 - **machine maintenance**
 - **and equipment improvement**



Furniture

- Produced by secondary wood industries (“panglong”/ small-middle wood enterprises and artisans)

Indonesian Statistic of 2000-2005

- The furniture industries in Indonesia contributed to the country’s income by 17%, and in 2005 the furniture export reached US\$ 1.78 billion comprising 75% wooden furniture



Furniture

- 1st class commodity (Medan Trading & Industry Service, 2011)
- In this research, description of marketing mix at three level furniture industries (small, middle, and big) was investigated.
- Marketing mix is the set of a strategy that includes different elements - the various parts of the marketing mix - to get the target in market share (Kotler, 1998).
- This research focused in “4P” (products, price, place, and promotion) regarding with the term of marketing mix.

Objectives

- To determine the marketing mix at small enterprise
(**case study at UD.Putra Kalingga**)
- To determine the marketing mix at middle enterprise
(**case study at CV.Karya Kasih**)
- To determine the marketing mix at big industry
(**case study at PT.Elang Tenaga Bersama**)

METHODS

- The data collection of furniture industries was carried out by surveys.
- The first step taken in data collecting was conducted using the purposive sampling based on both the law status of the enterprise/industry and the raw material from solid wood.

- UD.Putra Kalingga represented small enterprise. UD (“Usaha Dagang”) is trading business in the field of wood, it usually called “panglong” or artisan.
- CV.Karya Kasih represented middle enterprise. CV (“Commanditaire Vereniging”) is the Dutch terminology which describe the middle trading of wood and wood products. Both UD and CV have no law status.
- PT.Elang Tenaga Bersama represented big industry. PT (“Perseroan Terbatas”) is law status of the firm.

- The 2nd step, interviewing the manager/ owner was conducted using questionnaire. Data taken from this research be described. The main parameters of marketing mix were as follow :

Products : defining the variety of the products, form, and design made of the three level of furniture industries above.

Price: looking for knowhow deciding on a pricing strategy on the furniture products. Identifying the total cost to the manager/ owner by the interview.

Place or distribution : looking at the location of the furniture industries. Identifying the distribution channels.

Promotion : identifying how the industries recognize the products to public. This includes advertising, personal selling, exhibitions, sales promotions, or marketing people.

- The 3rd step, identifying the supporting parameters, consist of furniture production process and the raw material.
- The last step, analyzing the data used either description analysis or inductive analysis.

RESULTS AND DISCUSSION

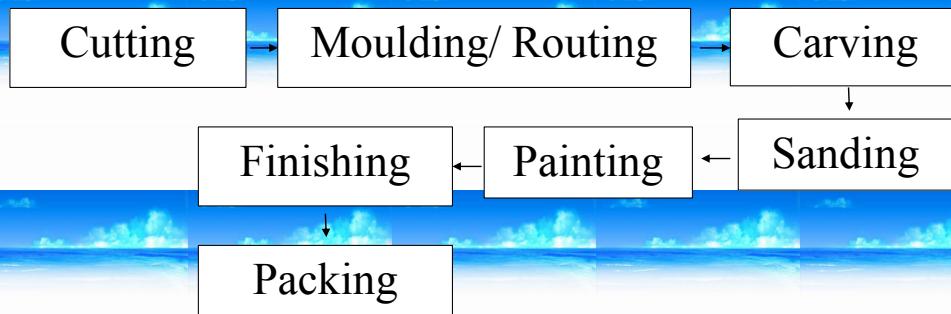
- Previous work by Sitorus (2009) though survey, resulted 164 units “panglong” -small-middle enterprises in the field of wood- were operated in Medan for 30 years.
- Moreover, Simarmata (2009) stated just only 50% “panglong” have own machine to produce the wood products. Therefore just only 82 “panglong” has the own machine to produce/ manufacture the wood products.



Small Enterprise (Case Study at UD Kalingga)

- UD Kalingga used sawn timber from supplier as raw material.
- The species was varies and the machinery was simple and low technology.
- One of identified species was teak wood (*Tectona grandis*). Teak is “the king of wood” and generally, all of the consumers understood that teak is the best in quality, performance, and aesthetic (Buckley, 2010).

Production process



Products and price :

- UD Kalingga's furniture products design is one of the important aspect attracting consumers to buy a particular products (Kasmaliasari *et al.*,2009).
- At UD Kalingga, the furniture design can be classified as **simple (minimalistic)** and **classic design**.

No	Item	Price (IDR)*
1	Guest chairs	4-6 millions
2	Rectangular table	400.000
3	Oval table	500.000
4	Dining set	750.000
5	Relax chair	1.000.000
6	Cupboard	900.000

Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000



UD Kalingga's products (a) guest chairs (b) dining set (c) cupboard

Place or distribution :

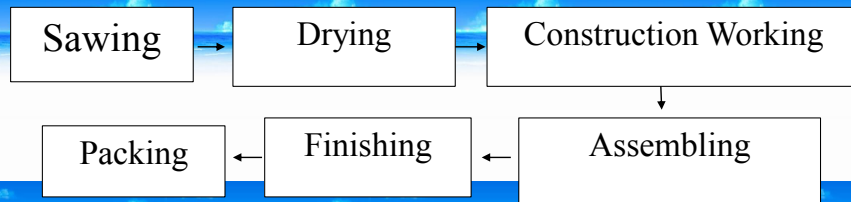
- The distribution channel started from producer, industrial user, and consumer.
- The promotion was through exhibition at Pekan Raya Sumatera Utara (North Sumatera Fair)



Middle Enterprise (Case Study at CV Karya Kasih)

- CV Karya Kasih used the commercial timber as the raw material.
- The species identified was meranti, pinus/pine, and teak.
- The machinery relatively modern

Production process




Products and price :

- CV Karya Kasih's furniture products design can be classified as **elegant, simple (minimalistic), futuristic, and classic design.**


No	Item	Price (IDR)*
1	Grovel furniture	16-20 millions
2	Replica furniture	10-13 millions

Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000



Grovel furniture usually made by request/ order, it has very high durability, therefore the price usually high. Because of the expensiveness, the grovel furniture was seldom to sell.

Grovel furniture made of CV.Karya Kasih



Replica furniture consist of office school furniture, sofa, and kitchen set. The price of office school furniture ranged IDR 10-13 millions while kitchen set just only the half, ranged 6-8 millions.

One of replica furniture called office school furniture made of CV.Karya Kasih

Place or distribution :

- The distribution channel started by producer and consumer without passing the agents. The promotion used by commercial advertisements in internet and magazine. Advertisement in internet showed with the address <http://evkaryakasih.indonetwork.co.id/profile/cv-karya-kasih.htm>.
- CV Karya Kasih also used the social network such as Facebook to promote the products with the address <http://id-id.facebook.com/people/Cv-Karya-Kasih-Meubel/100001631143042>

The image displays two screenshots of a computer screen. The left screenshot shows the website 'CV. Karya Kasih' with a navigation menu and a table of contact information for 'Korespondensi Perusahaan'. The right screenshot shows the Facebook profile page for 'Cv Karya Kasih Meubel'.

Korespondensi Perusahaan	
Nama	Ts. Dedy Vitor Sula Sutijana (Pemesan)
E-mail	tsdedyvitor@yahoo.com
Nomor HP	+620995901384
Nomor Telepon	+62 061 8445717
Alamat	Jl. Abadi No. 65A T. Rejo Madar 28122, Sumatera Utara Indonesia

Free advertisements using website of CV.Karya Kasih and Facebook

Big Industry

- PT Elang Tenaga Bersama used sawn timber and logs as the raw material.
- The species identified was pinus/pine (*Pinus merkusii*) and rubber wood (*Hevea brasiliensis*). Both of the wood are apparent, because the market export mostly come from East Asia. Consumer from East Asia (eg Japan and Korea) prefer apparent wood than dark wood. This condition is different from in Jepara. Jepara's furniture industries used teak and mahogany - both of them are dark wood – as the raw material (Yovi *et al.*, 2009).
- The modern machineries are properly to produce in big scale. The production was continuous process, so the products have the same standard in quality, quantity, and type.

Products and price :

- PT Elang Tenaga Bersama's furniture design products can be classified as **elegant, simple (minimalistic), oriental, futuristic, and classic design.**



Chairs Product made of PT.Elang Tenaga Bersama
(a) guest chair (b) dining chair (c) sofa

No	Item	Price (IDR)*
1	Bedroom set and sofa	50 millions
2	Door frame	900.000
3	Cupboard	3 millions
4	Dining set	12 millions
5	Guest chair	9 millions

Remarks : IDR = Indonesian Rupiah, approximately 1 US\$ = IDR 9000

Place & Promotion

- The distribution channel started by producer agents and wholesaler (industrial distributor to industrial consumer user).
- This is not complicated if be compared in Jepara as the center for wooden furniture industries in Indonesia. Jepara wooden furniture marketing channel has five common pattern (Kasmaliasari *et al.*, 2009) :
 - 1) artisan – exporter + warehouse – export
 - 2) artisan – showroom + finishing – consumer
 - 3) artisan – collector/broker – showroom + finishing – consumer
 - 4) artisan-collector/broker-showroom outside Jepara-consumer
 - 5) artisan-broker + finishing-showroom outside Jepara-consumer.
- The promotion was done by active and passive ways. Looking for the clients and hire the marketing officer are active ways while join the exhibition at PRSU is one of the passive ways.

CONCLUSION

- Data taken from this research indicates that UD Putra Kalingga is classified in **small enterprise**, the products are very competitive in the market because of the **cheapness of the price**. Therefore, price is the most important in marketing mix in this industry.
- **Middle enterprise** in this case was CV.Karya Kasih. Most of the products are manufactured based on order from consumers. The **promotion** is done repeatedly, using internet (both website and social networking). Therefore, promotion is the most important in marketing mix in this industry, to persist the order from consumers.
- The **big furniture industry** was PT.Elang Tenaga Bersama. This industry was already stable. **All of the component of marketing mix – products, price, place, and promotion- have played the same important rule to this business.**

