

AN OVERVIEW OF RATTAN INDUSTRY STATUS AND ITS ECONOMIC ASPECT IN SETTING UP RATTAN-BASED INDUSTRY IN MALAYSIA

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ABSTRACT

Rattan constitutes the most abundant non-timber forest products that could be used as a substitute for wood in the form of furniture and other products in many communities, especially in Malaysia. This study makes an explorative overview of two main research topics in forest resources management which are determined the status of the rattan industry and their economics aspect in Malaysia. Malaysia is among the top most crucial rattan producers in the world. The country is experiencing a robust development in the rattan industry. This commodity plays a significant role in the Malaysia economic growth. There are a few processes or techniques which are vital in this industry. Malaysia is the second in the rank after Indonesia for the rattan industry. In addition, the viability of rattan furniture manufacturing as a business is determined through cost and profit analyses and the results discussed in this review.

Keywords: Rattan, Non-timber, Industry, Economic, Malaysia

INTRODUCTION

Rattans belong to the species of palms, Calameae and family Arecaceae. There are about 600 species of rattan representing 13 genera mainly in Southeast Asia and the Pacific (Wahab *et al.*, 2016 & 2007; Effah *et al.*, 2014). These are *Calamus*, *Eremospatha*, *Korthalsia*, *Laccosperma*, *Myrialepis*, *Oncocalamus*, *Plectocomia* and *Plectocomiopsis* (Maria *et al.*, 2016; Wahab *et al.*, 2016). In Malay term, rattan knew as 'Rotan' and it has a 1-5 cm of diameter and can be reacted 30 metres of length after 10 years growth. In rare cases, some rattan species can grow up to 200 metres long of climbing palms (Wan Tarmeze *et al.*, 2018). It is indigenous to tropical regions of Asia, Africa, and Australasia. It is one of the most important renewable non-wood forest products in Malaysia (Wahab *et al.*, 2016 & 2007). Rattan diversity is rich in Malaysia, Indonesia, Philippines, China, Bangladesh, Sri Lanka, Myanmar and India.

Rattan is of great economic importance in the handicraft and furniture manufacturing since it is rich in fibre, possess suitable toughness and easy to work with (Razak *et al.*, 2016 & 2010). It is also a new milestone for the taxonomic study of rattan, providing systematic and practical technical guidance and assistance for the classification and nomenclature of the rattan which are the inventory and evaluation of rattan resources, and the protection, cultivation, processing, utilization and international trade of these strategic resources (Maria *et al.*, 2016). Rattan continued to play a significant role in the world market with total trade of over USD 6.5 billion per annual (Wan Ariffin *et al.*, 2018). Then rattan market was led by Indonesia with 37,000 hectares of cultivation area and follow by Malaysia are about 31,000 hectares. Rattan is comfortable to cultivate, harvest, transport, store, and marketable. Rattan products have some advantages compared with another forest industrial raw materials since the products relatively have cheaper cost, stiff, durable, beautiful, comfortable in use, light,

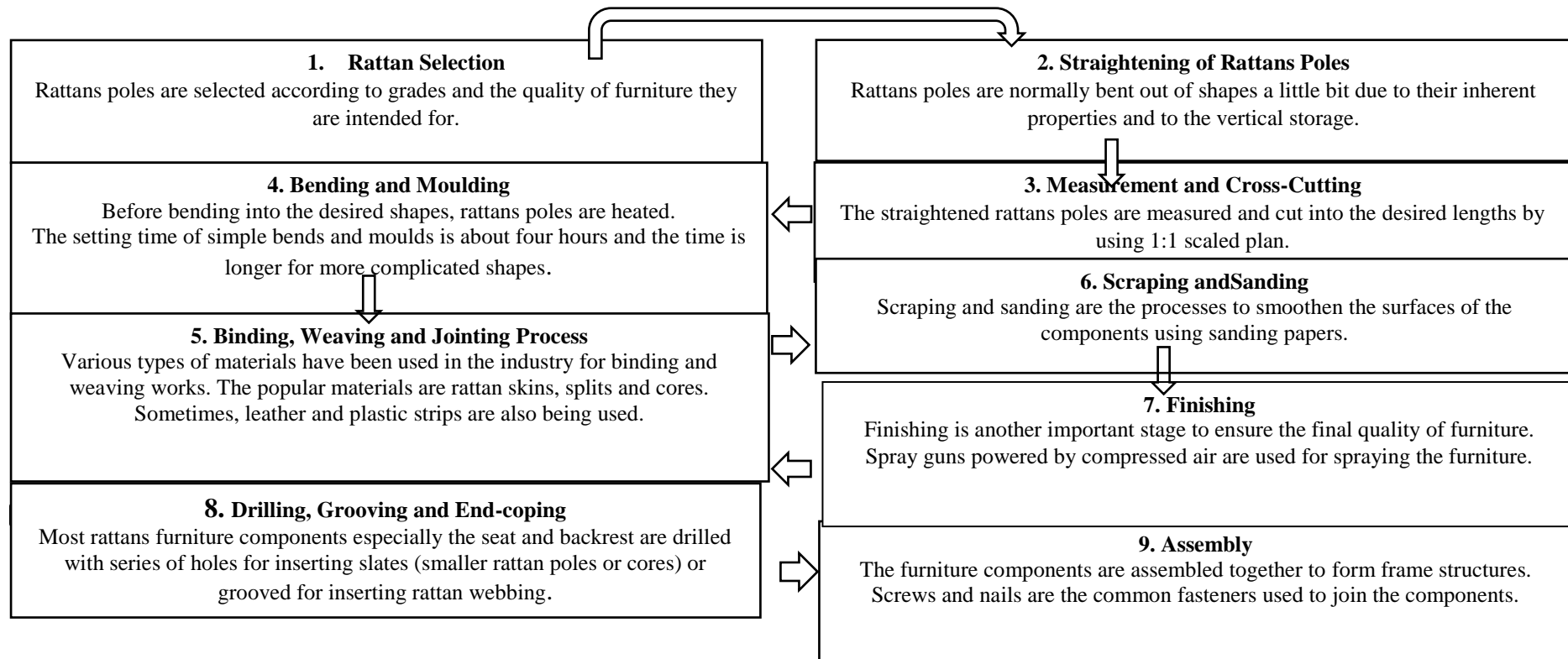
portable and have art sense as well (Aminah *et al.*, 2017; Edi Glenn, 2014). Also, rattans as known as the climbing palms whose bare stem is used in the construction of cane furniture and mats (Rashid *et al.*, 2016).

Rattan's furniture manufacturing is a process of converting rattans materials into value-added products. Furniture plays an important role in explaining the way of life of an individual in the spatial. The process can be as simple as a backyard enterprise and as complicated as the medium- to the large-sized industry. A model of a rattans furniture manufacturing company is proposed here with appropriate information on the financial viability as well as the technical requirements. The model was developed based on the data and information collected during a recent survey to some rattans furniture mills/factories in Malaysia. Based on Rashid *et al.* (2016) study, the export of rattan furniture in Malaysia is ranked lowest with a value of RM 35,149,879.00 compared with wooden furniture exports valued at RM 6,328,334,275.00 in the year 2014. The decline in the value of exports in the sector will affect revenues, and indirectly rattan furniture industry will decline.

Rattans provide a means of livelihood for harvesters, processors and traders in the rattan producing countries of South East Asia, Australia, India, the Pacific and Western Africa (Wahab *et al.*, 2016; Effah *et al.*, 2014). Rattans have been recognised having a wide variety of both household and commercial uses. It has had long been associated with the lively-hood of the rural community and without a doubt becoming an essential non-wood forest product produced in Asia. It is a choice material for the manufacture of furniture and handicrafts items due to its strength and flexibility. Despite its environmental and socio-economic importance, the rattans sector lacks adequate authoritative necessary data required to enhance its development. Besides, rattan products are versatile material (Razak *et al.*, 2017). The larger diameter rattans are used for making furniture, carpet-beaters and walking sticks while the smaller diameter is used for making mats, baskets, marine traps, animal cages and coarse wickerwork (Wan Arrifin *et al.*, 2018). Effah *et al.* (2014) study, the further-processed bamboo products including flooring, panels, charcoal, pulp and paper, constituted 23%, while bamboo and rattan furniture accounted for 21% of the total global export. Men have used rattan for their livelihoods and subsistence for many centuries (Sastry, 2001). Although rattan naturally grows mainly in the Southeast Asia regions, the material has found its way too many other parts of the world. A report by UNIDO (1983) indicated that rattan had been used in ancient Egypt, parts of Europe during the Renaissance period and France during the reigns of Louis XIII and Louis XV (UNIDO, 1983).

MATERIALS AND METHODS

There are nine processes for rattan manufacturing as follows.



RESULT AND DISCUSSION

Economic Aspect for Rattan Industry

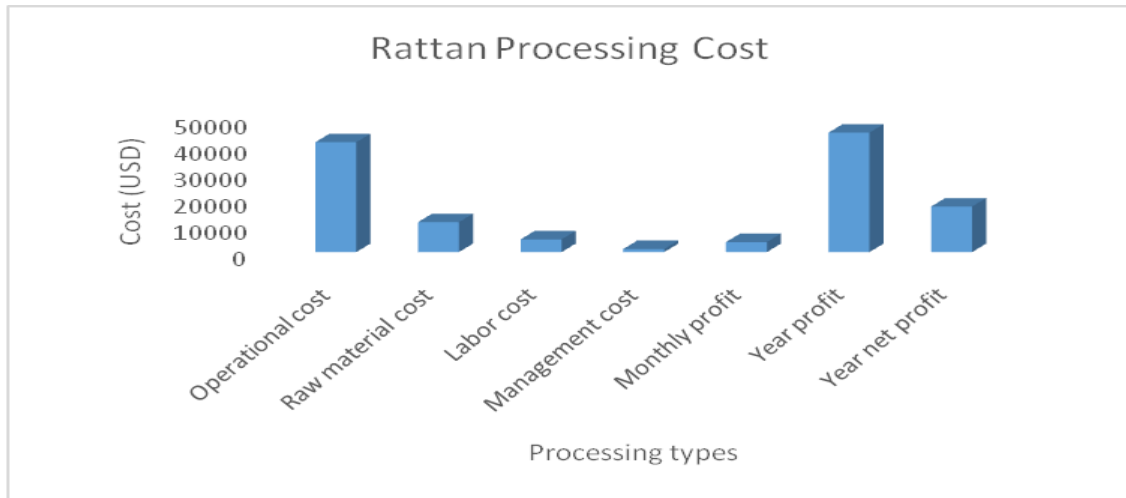
The commercial or economic aspect has defined as an organisational culture that is most effective and efficient behaviours for the best buyer and generates superior performance for the company, strategies in business, competitions and market share (Suparman & Endang, 2017). The economics aspect in communities' income growth rate for rattan is related to the fields of academics, private and government businesses (Deny, 2016). The phenomenon happened when academician should study rattan content, research, workshop, pattern and also technical based. The industry-based supported on expanding the business to international market, collaboration, design, trading, and management. Government support which provides training, build policy and regulations, competition and exhibition events. The big issues for rattan are unstable at the price rate.

The rattan raw material price has increased up to 30% since 1985 (Nurlaela, 2017). The effect from the phenomenon was an effect on up and downstream rattan process. The overview, till now and starting from 2005 bamboo was not going to be a significant source of community income, and that non-wood or non-forest cash crops such oil palm and rubberwood would become more prominent sources of communities income (Erik *et al.*, 2014). The statement was supported by Erik *et al.* (2014) research on the year 2011 with communities income was decline to 62.5% from 2004 - 2011. The factors were an influence for the phenomenon which is from the global economic crisis, the higher transactions cost (such as taxes, tariff, administrative fees, and also transportation cost), lack of information or research for rattan processing and poor connection between rattan producers with domestic rattan consumer.

Rattan Processing Cost

Figure 1 indicated the rattan processing industry which are oil curing, bleaching, and preservation methods. A based research survey by Wahab *et al.* (2016 & 2001) study, the total cost for rattan processing industry is USD 58,740.00 which is 70.65% for operational processing (land area, building, machinery, equipment, hand tools, electrical bill, water installation, telephone bill and miscellaneous). Also, 19.24% of raw material cost included raw rattans, chemical, and fuelwood for curing treatment. Others cost for labour (manager, supervisor, clerk, skill worker, general worker, guard, and driver) and management (license, bill, transportation, paper printing, and maintenance) with 8.15% and 1.96%, respectively. According to the total operational cost, rattan processing industry was estimated gain 6.40% profit per month and achieved to 29.30% net margin profit for the annual cycle. Then forecasted around 53.26% of gross profit for annual (included government tax).

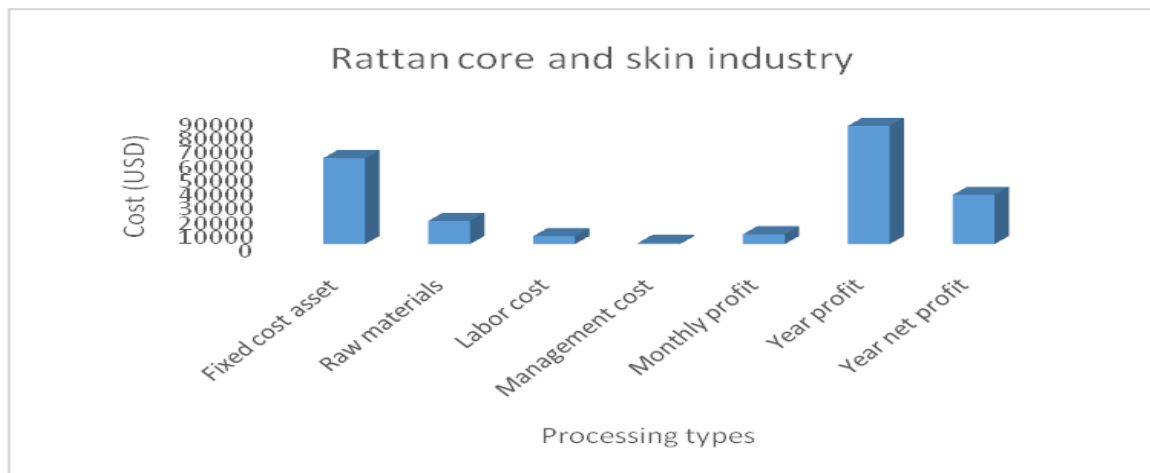
Figure 1: Rattan processing cost for industrial setup



Rattan Core and Skin Industry

After fulfilling all the processing stage, the material that is distributed to the rattan skin and core industry for secondary processing. Total cost for that industry around USD 84,190.00 as shown in Figure 2. The fixed cost (land area, building, machinery, equipment, hand tools, electrical bill, water installation, telephone bill and miscellaneous) for that industry estimated around 72.70%. Followed by raw materials cost (19.60%) include oil cured rattan of various species, types, and diameter, chemical and miscellaneous. Next, 6.70% for labour cost (manager, supervisor, clerk, skill worker, general worker, guard, and driver) and another 1.00% is for management cost included license, bill, transportation, paper printing, maintenance, and others. Based on the total operational cost for rattan core and skin industry, estimated the monthly profit was achieved to 8.33% and followed by 41.63% of net margin profit per annual. The gross profit included government tax forecasted around 75.69% per anam.

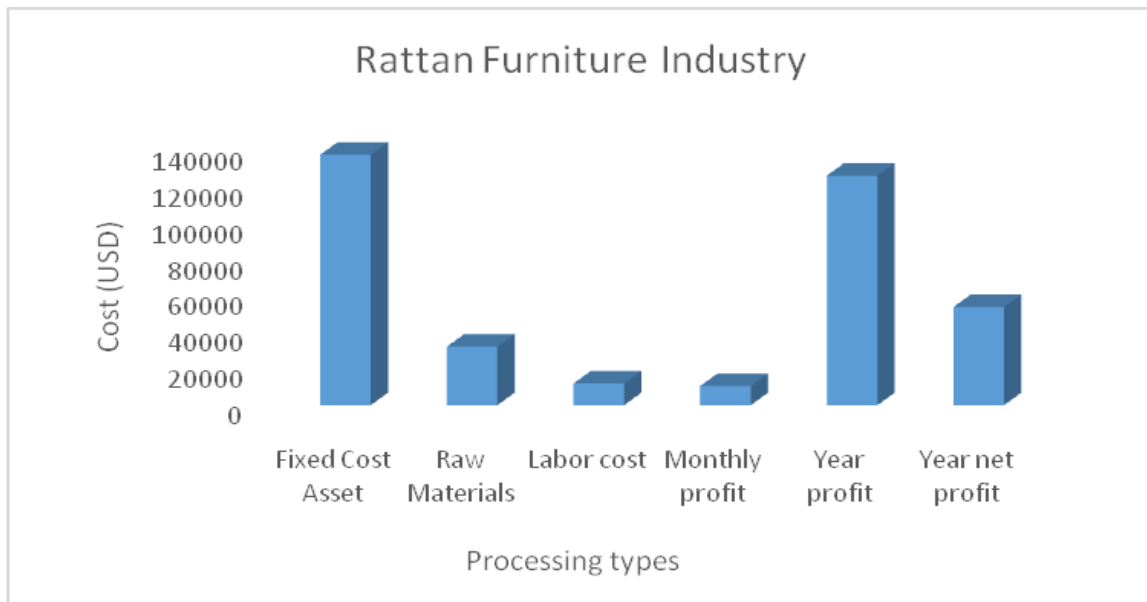
Figure 2: Rattan core and skin industrial setup and profit gain.



Rattan Furniture Industry

The tertiary process is a cycle from ready raw material to products. The largest rattan product industries in the world were the furniture industry. Figure 3 highlighted the operational cost and margin profit gain for the furniture industry. Found the total operational cost for that industry was around USD 181,990.00 with 75.76% from the total amount used as fixed cost assets included land area, building, tools and machinery, electric wiring, water, and telephone installation, one-ton lorry and also miscellaneous. Another cost was raw material included peeled rattan poles of various sizes, rattans split, lacquer, thinner and screw with 17.69% from total cost. Then followed by labour cost (6.55%) with categories manager, designer, supervisor, clerk, skilled and semi-skilled general workers for cross-cutting, drilling, bending, assembling, scraping, sanding, filling, binding, weaving, and finishing. According to the total operational cost of the furniture industry, estimated around 5.79% of the monthly profit from that industry and forecasted 29.69% net margin profit per annual. While the gross profit included government tax at around 69.43% per annual.

Figure 3: Furniture industry setup and profit gain

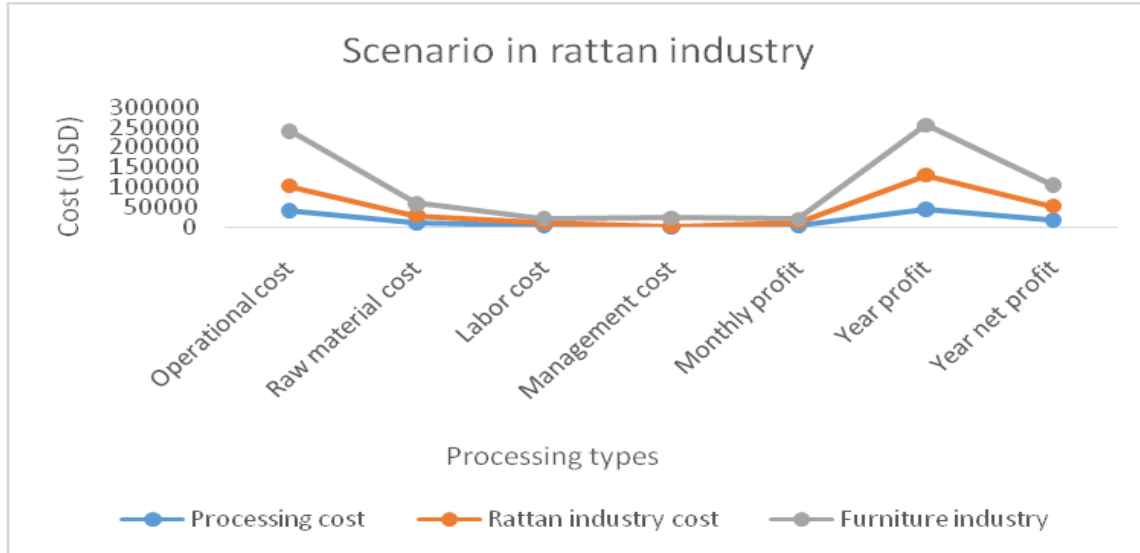


Rattan Industry Status

From primary (oil curing, bleaching, and preservation process), secondary (rattan core and skin industry), and tertiary (products industry / furniture industry) stages on rattan industries, Figure 4 indicated furniture industry had the highest operational cost with twice than rattan core and skin industry then triple than rattan treatment industry. While on the stage of raw material used and labour cost, the furniture industry highlighted 20 to 30% higher cost to setup compared than treatment industry and core and skin industry. Nevertheless, the economic growth shows the highest investment gave the highest profit as well. Then the furniture industry indicated more gain on monthly and year to the range 17- 32% compare than core and skin industry and also the treatment industry. While the management cost highlighted the furniture industry increase up to 90% cost compare than other because due to the technical process that industry applied more machinery and tools as well (like a crosscut

saw, bending machine, straightening machine, air compressor, drill, spray gun, mould bench, pneumatic driver and blowtorch) and needed the highest cost for maintenance.

Figure 4: Scenario on primary, secondary and tertiary of rattan industries.



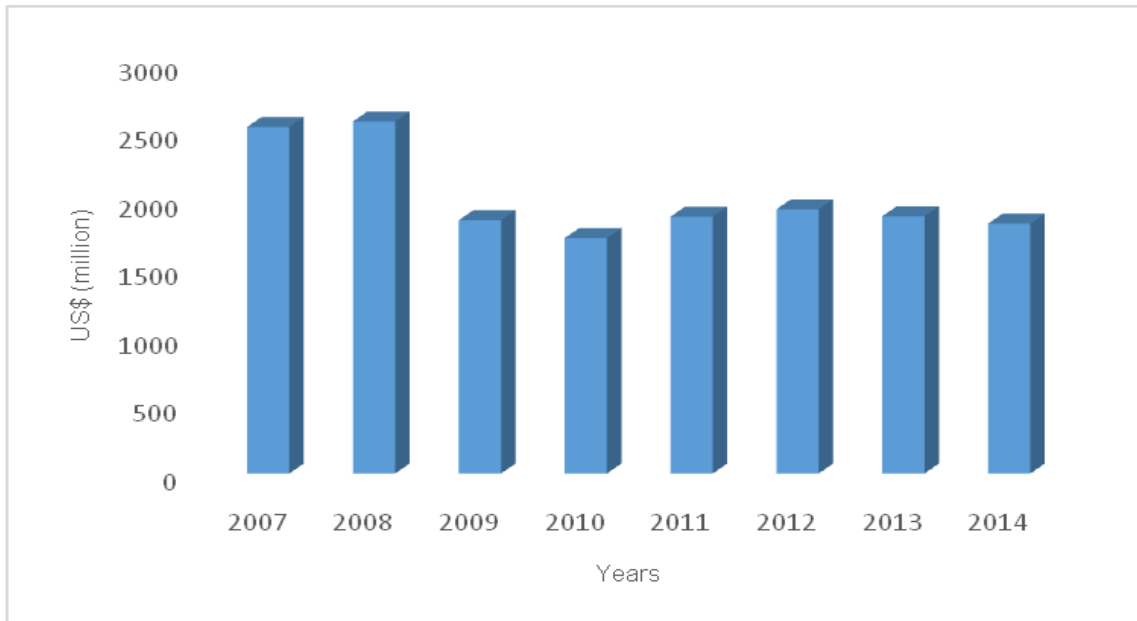
Rattan Market Trade

Globalisation has been a reason behind the development of the world’s rattan sector since the middle of the nineteenth century when rattan was exported in bulk to the affluent countries of the West to produce high-quality furniture. It partly a result of globalisation, and by international demand for “green” products that are sustainable. Recent legislation by some nations to ensure the legality of wood sources also affects rattan and is likely to affect aspects of their international trade. (Hoogendoorn & Benton, 2014).

The international market for rattan products was dominated by rattan raw materials, rattan woven products and rattan furniture, of which rattan baskets and rattan furniture accounted for 34% and 40% of the total exports before 2007. It was followed by rattan seats and rattan mats/screens, with a proportion of 13% and 9%. Rattan raw materials were the least traded products, constituting about 3% of the world total. Based on UN Comtrade data, the international trade of rattan products increased steadily between 1996 and 2006. The export value of rattan and bamboo products increased from US\$ 1,299 million in 1992 to US\$ 3,891 million in 2006, with an average annual growth rate of 12%, an average growth of US\$ 172.8 million every year (Wu, 2014).

According to INBAR (2014), bamboo and rattan are mostly traded within and between Asia and Europe. Asia is the main source of bamboo and rattan products. While Europe, Asia and North America are the major importing markets. In 2014, the export value of bamboo and rattan products from Asia reached US\$ 1,563 million, meaning that the continent accounted for 85% of world exports. International trade of bamboo and rattan has remained relatively stable since 2009, following a major drop in 2008. This drop is thought to have been due to the global financial crisis which is similar falls are seen in other wood product categories (Figure 5).

Figure 5: World exports of bamboo and rattan products 2007-2014.



Source: (INBAR, 2014)

CONCLUSION

The rattan industry is one of the most important non-wood forest products industry in the international trade and has the immense economic potential for many communities in Malaysia or other developing countries. The production with proper finishing which is innovative and creative products shall increase significantly beyond communities' income. The lack of technologies, investment and sustainable raw material supply resulted in crucial challenges for the rattan industry. Improving the availability of raw materials through rattan plantation development and the intensive induction course in the use of modern technology in production and creating some new product such as composite residues, nano-filler or high-techno product could develop it further. Providing adequate education to the people involves in the industry on the rattan properties, processing and utilization at schools and institutions could enlighten potential consumers on the need to substitute rattan for wood may also boost the industry.

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REFERENCES

- Aminah S., Lahije A.M., Ruchaemi A. & Golar. (2017). Cost and Revenue Optimization of Rattan Industry Management in Palu Town, Central Sulawesi. *International Journal of Sciences: Basic and Applied Research (IJSBAR)*, 23(1), 337-347.
- Deny W.J. (2016). Rattan Product R&D In Indonesia. Knowledge Transfer Program, UMK MTIB.
- Edi, E. (2014). Kajian pengembangan mebel rotan di Sumbawa Barat. *Dinamika Kerajinan dan Batik*, 31(1).
- Erik M., Ramadhani A., Meilinda W. & Andrew, T. (2014). Rattan: The decline of a once important non-timber forest product in Indonesia. Occasional Paper 101. Bogor, Indonesia: Center for International Forestry Research (CIFOR).
- Effah, B., Boamong E., Asibey O., Afi Pongo N. & Nkrumah A. (2014). Small and Medium Bamboo and Rattan Enterprises in Economic Empowerment in Kumasi: Perspectives of Producers. *Journal of Social Economics*, 1(1), 11-21.
- Hoogendoorn, J. C. & Benton, A. (2014). Bamboo and rattan production and the implications of globalization. In *Forests and Globalization* (Vol. 166, No. 184, pp. 166-184). ROUTLEDGE in association with GSE Research.
- INBAR (2014). Bamboo value chains and inclusive green growth. In *International Market of Bamboo and Rattan 2014*.
- Maria S. V., Lynn G. C., Dransfield J., Govaerts R. & William J. B. (2016). World Checklist of Bamboos and Rattans. INBAR Technical Report International Bamboo and Rattan Organisation (INBAR): Beijing, China.
- Nurlaela K. D. (2017). A Model of Manau Rattan Distribution Cost in Sumatra. *International Journal of Supply Chain Management*, 6(3).
- Rashid A.A., A.H., Junaidy D.W., Hamizah N., A.H., Ezran M., Z.A., Firuz M.A. & Firdaus M.H. (2016). Rattan Furniture Design-Training Delivery Towards Commercial Value of Commodity Sector. 3rd National Conference on Knowledge Transfer, Penang, Malaysia.
- Sastry, C. B. (2001). Rattan in the twenty-first century - an overview. UNASYLVA-FAO-36.
- Suparman & Endang, R. (2017). Market Orientation, Product Innovation on Marketing Performance Rattan Industry in Cirebon Indonesia. *IOSR Journal of Economics and Finance (IOSR-JEF)*, 8(1), 19-25.
- UNIDO. (1983). Manual on the production of rattan furniture. New York, USA, United Nations Industrial Development Organization (UNIDO).
- Wahab R., Abdus Salam M., Mohd Fauzi N., Mat Rasat M.S. & Samsi H.W. (2017). Influence of Basic Density in Determining the Maturity of Forest Planted *Calamus Manan*. *Research Journal of Pharmaceutical, Biological and Chemical Sciences*, 8(5), 204.
- Wahab R., Sulaiman O., Mustafa M.T., Sidek S. & Rasat M.S. (2016). Rattan: Propagation, Properties and Utilization. 269 pp. ISBN 978-967-0955-30-8. UMK Publication.
- Wahab R., Othman, S. & Samsi H.W. (2010). Rattan Processing and Transformation Industry in Malaysia. ISBN 978-967-5224-32-4. Publisher UMS. 148 pp.
- Wahab R., Sulaiman O., Rashid K.A. and Samasi H.W. (2007). The relationship between basic density, compression and bending strength of 8, 12, 18 and 24-year-old *Calamus manan* cultivated intercropping between rubber trees. *Journal of Plant Sciences* 2(1). 75-81, 2007. ISSN: 1816-4951, Academic Journals Incorporation [USA](#).

- Wahab R., Mustafa M. & Omar A. (2001). Rattan oil curing, bleaching and preservation. Transfer of Technology Model series, published by International Network for Bamboo & Rattan.
- Wan Ariffin W.T., Rene K., Muralidharan E.M., Sreekumar V.B., Chowdhary C., Sheng L.R., Viet T.L., Sunderland T., Haider R., Tekpetey S., Olorunnisola A.O., Achdiawan R. & Hourt H.E. (2018). Rattan Terminologies. INBAR Technical Report No. 39. International Bamboo and Rattan Organisation (INBAR): Beijing, China.
- Wu, J. (2014). International trade of bamboo and rattan 2012. The International Network for Bamboo and Rattan (INBAR), Beijing.

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