INNOVATION AND GROWTH STRATEGIES FOR THE MALAYSIAN WOOD INDUSTRY

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1.0 Introduction

Agricultural-based economy (1970s)

(rubber, tin and palm oil)

Manufacturing

(electric and electronic, food, chemicals, petroleum…)

- 90% of the manufacturing sector are dominated by small and medium enterprises (SMEs) with electrical and electronic as the largest export product since 1980s.

- Manufacturing sector is targeted to grow at 5.6% and subsequently contribute about 28.5% to GDP by 2020.

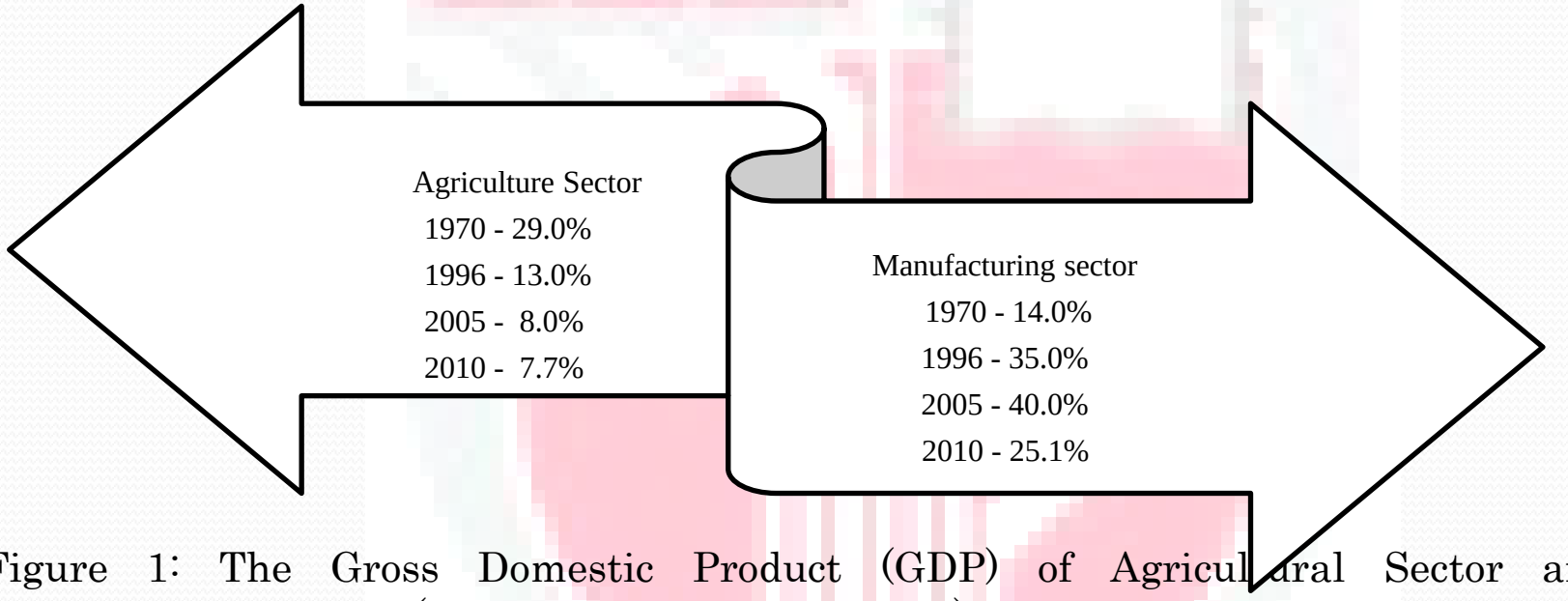


Figure 1: The Gross Domestic Product (GDP) of Agricultural Sector and Manufacturing Sector (Source: Ministry of Finance)

World Trade Organization (2010) reported that Malaysia currently ranked in 22nd as the leading exporter of merchandize goods.

2.0 Innovation Concept

- Innovation has long been argued to be the engine of growth.
- Innovation in wood processing keeps the industry competitive from other materials, such as plastics, metals and steel.
- Innovation is not a single action but a total process of interrelated sub processes.
- It is not just the conception of a new idea, nor the invention of a new device, nor the development of a new market.

Types of innovation	Example
Product innovation	The development of a new or improved product
Process innovation	The development of a new manufacturing process
Organizational innovation	A new venture division, a new internal communication system, introduction of a new accounting procedure
Management innovation	Total Quality Management (TQM) systems, business process re-engineering (BPR)
Production innovation	Quality circles, just-in-time (JIT) manufacturing system, new production planning software, e.g. MRP II, new inspection system
Commercial/Marketing innovation	New financing arrangements, new sales approach
Service innovation	Internet financial services

Table 1: A Typology of Innovations

The evidence from the Global Competitive Report (2011) indicated that the Malaysian innovation capacity in global ranking was 25 out of 144 countries.

With the increase in Malaysia's GDP per capital to US$9,700 from US$8,423; Malaysia has upgraded to the transition stage towards the "innovation-driven" stage of development

Table 2: Malaysia Innovation Performance at the Global Stage

Innovation Aspect	China Ranking	MALAYSIA RANKING	U.S Ranking
Capacity for innovation	21	25	6
Quality of scientific research institutions	39	32	4
Company spending on R&D	22	16	6
University-industry collaboration in R&D	25	22	1
Gov. procurement of advanced tech. products	12	8	5
Availability of scientists and engineers	35	33	4
Utility patents per million population	51	29	3

(Sources: The Global Competitive Report, 2010-2011)

3.0 The Malaysian Wood Industry

- The industry has contributed to the nation's economic growth, as well as its foreign exchange earnings.
- There are 3991 wood industries providing employment more than 300,000 people.
- In 2010, the wood-based sector contributed to 3.7 percent of the GDP and 3.2 percent of the country's total merchandise export.

Primary Processing  Secondary Processing

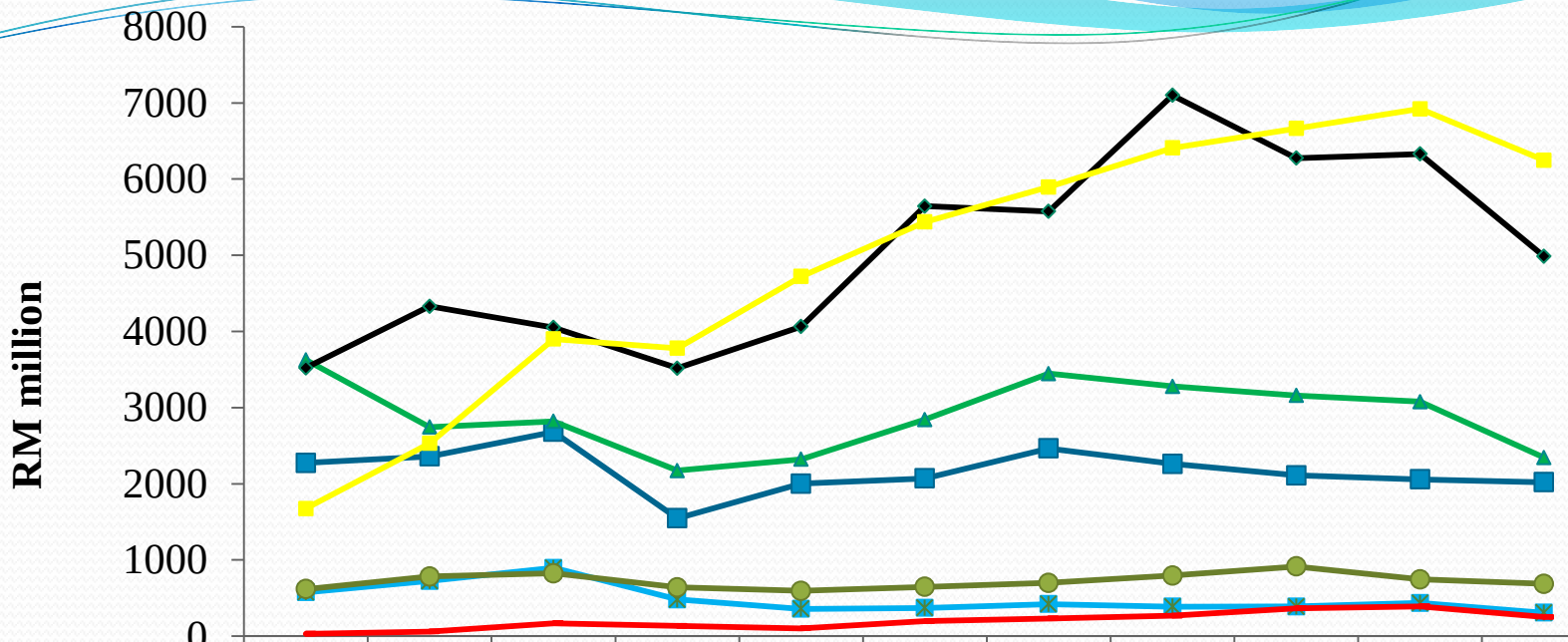
The transformation was carried out through the **Industrial Master Plan**, to improve and enhance the productivity growth of the manufacturing sector.

The 1st Industrial Master Plan (IMP-1) (1986 – 1995) was not showing encouraging progressions which did not achieve the goal completely. Thus, a slightly modification was carried out in 2nd Industrial Master Plan (IMP-2) (1996–2005) to strengthen the productivity growth in manufacturing sectors.

Table 4: Constituents of Wood Products Export

Year	Primary wood product (%)	Secondary wood product (%)
1990	68	32
1995	59	41
1999	50	50

Malaysian wood based industry recorded reduction in primary wood products while secondary wood products grew 9 percent at the end of IMP-1.



	1995	1997	1999	2001	2003	2004	2005	2006	2007	2008	2009
Logs	2273	2359	2682	1547	2001	2070	2465	2261	2111	2057	2021
Sawn timber	3626	2744	2819	2172	2321	2843	3447	3278	3160	3077	2345
Plywood	3521	4330	4051	3517	4064	5645	5575	7101	6274	6329	4987
Veneer	575	724	895	482	358	370	421	387	389	435	307
Moulding	618	783	825	641	594	647	698	796	915	744	686
Wooden Furniture	1674	2531	3900	3778	4721	5438	5895	6409	6664	6921	6248
Particleboard	31	61	169	134	102	196	233	267	365	391	250

Figure: The Export of Timber and Timber Products (RM million)

Sources: Malaysian Timber Council 1995 – 2007, (2008);
Malaysian Timber Industry Board 2008 - 2009, (2010)

4.0 Issues and Challenges of the Industry

- Malaysia has comparative advantage due to its abundant resources.
- But the supply has been unsustainable.
- The total average annual log production from natural forest in Malaysia is declining.

4.1 Sustainability of Wood Materials Supply Chain

Table: Production of Logs (million m^3) from Natural Forests

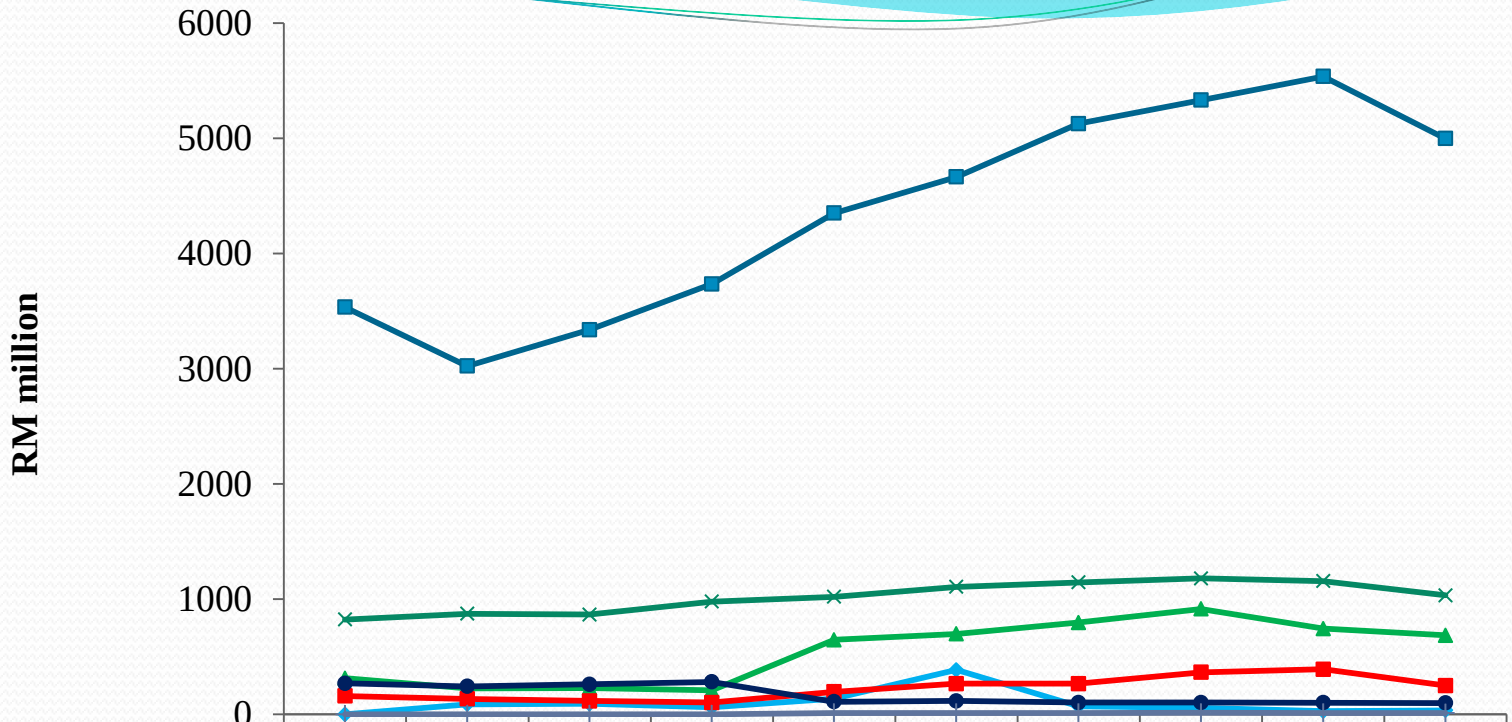
Sources: FDPM, SFD, SD Sarawak and MTIB

Year	Peninsular Malaysia	Sabah	Sarawak	Malaysia
2000	5.1	3.7	14.3	**23.1**
2001	4.2	2.6	12.2	**19.0**
2002	4.4	4.4	12.3	**21.1**
2003	4.4	5.0	12.2	**21.6**
2004	4.6	5.4	12.1	**22.1**
2005	4.4	6.0	12.0	**22.4**
2006	4.7	5.3	11.9	**21.9**
2007	4.2	5.9	11.9	**22.0**
2008	4.0	4.7	11.3	**20.1**
2009	3.7	4.1	10.4	**18.2**

- Rubberwood has emerged as an important alternative wood material.

- Rubberwood has been widely use in the industrial sector due to its availability and low price compared to tropical hardwood.

- Export value of Rubberwood products has been steadily growing over the years (almost 83% of total furniture exports derived from Rubberwood products)



	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009
Sawn timber	0	87.3	91.6	60.3	137.1	386.2	69.8	55.2	27.1	34.3
Furniture	3535.2	3022.9	3339.4	3735.8	4350.8	4665.3	5127.4	5331.9	5536.9	4998.6
Mouldings	313.2	224.3	228.8	208.1	646.5	698.1	796.3	915.3	744.1	686.4
MDF	823	873.3	866.8	978.6	1020.9	1106.7	1144.9	1180.9	1156.1	1033.4
Chipboard	160	134	115.7	102.2	195.8	266.7	266.9	364.9	391.7	250.1
Builders, Carpentry & Joinery (BCJ)	269	243.4	261	281.3	109.5	116.1	102.7	101.8	100.5	98.8
Wooden Frames	0	0	0	0	11.6	12.7	12.2	13.2	12.4	10.5

Figure: Export of Rubberwood sub-sectors

Source: Ratnasingam et al. (2011)

4.2 Legality and Environment Certification

- Malaysian Timber Certification Scheme (MTCS) endorsed by Program for the Endorsement of Forest Certification schemes (PEFC), Forest Stewardship Council (FSC) certified forest management unit (FMU).

- Only 353 out of thousands companies in wood industry were the holder of certificate of chain-of-custody.

- Costing - the main reason that appear hinder companies from seeking CoC.

Table: Amount of Holders for Forest Management Certificate (FMC), CoC, Combined FMC and CoC and Controlled Wood Forest Management under PEFC and FSC Forest Certification Systems in Malaysia (2012)

Forest Certification Systems	FMC Holders	CoC Holders	Combined FMC and CoC	Controlled Wood Forest Management
PEFC/MTCS	9	167	-	-
FSC	0	177	7	2

Source: PEFC and FSC

4.3 Human Capital

There were 71,400 workers were employed in the panel products sub-sector (37%), followed by furniture 68,000 (35%) and sawmilling and moldings 38,400 (20%).

The actual requirement for human capital particularly in upper level was 5,650 / year but the higher education institutions provide 2,076 graduates/year. This represented 36.7% of the requirement gap of the industry (NATIP, 2009).

There is a need for more skilled workers at all levels such as (i) managerial, (ii) supervisory and (iii) operational.

Proposed training would consist 1,030 workers at the managerial level; 2,850 at the supervisory level; and 5,930 at the operational level.

Table: Number of Workers to be Trained Annually up to 2020 Source: NATIP (2009)

Sub-sector	Level of Employment	Estimated Composition of Labour Force in the Timber Industry (%)	Estimated Total No. of Workers	Estimated No. of Workers to be trained/Year -5%
Sawmilling and Moulding	Managerial	10	3,800	200
	Supervisory	20	7,700	400
	Operations:			
	- Skilled	30	11,500	600
	- Unskilled	40	15,400	800
Subtotal			**38,400**	**2,000**
Furniture	Managerial	10	6,800	350
	Supervisory	15	10,200	500
	Operations:			
	- Skilled	35	23,800	1,200
	- Unskilled	40	27,200	1,400
Subtotal			**68,000**	**3,450**
Panel Products	Managerial	10	7,100	400
	Supervisory	50	35,700	1,800
	Operations:			
	- Skilled	20	14,300	700
	- Unskilled	20	14,300	700
Subtotal			**71,400**	**3,600**
BJC	Managerial	10	1,500	80
	Supervisory	20	3,000	150
	Operations:			
	- Skilled	40	6,000	300
	- Unskilled	30	4,500	230
Subtotal			**15,000**	**760**
Total			**192,800**	**9,810**

4.4 Inconsistency in Policy Direction

Ministry of International Trade and Industry (MITI), Ministry of Plantation and Commodities (MPIC), Ministry of Human Resources (MOHR), and Ministry of Home Affairs (MOHA), Ministry of Science, Technology and Innovation (MOSTI), Ministry of Natural Resources and Environment (MNRE) …

MITI and MPIC - urge to increase productivity

MOHR and MOHA - urge reduce the intake of foreign workers

MOSTI - technology funding for wood industry limited

Forest Research Institute Malaysia (FRIM) of MNRE - R&D focus spread to both upstream and downstream timber industry

5.0 Current Status of Innovation

- Malaysia's wood industry is a mature industry.
- However, its operational strategies is at an infancy stage.
- Malaysia is the largest exporter of sawn timber and the second largest supplier of plywood as well as 10th largest exporter of furniture in the world.
- Malaysian wood-based products are comparative advantage driven!
- Malaysian furniture industry is still a mass producer of "commodity" type furniture.

Table: Productivity and value addition in the Malaysian furniture industry

Year	Value Added (RM mil)	Value Added Growth (%)	VA Intensity	Productivity	Productivity Growth (%)
1988	206	48.2%	56.1%	2.28	4.7%
1993	596	41.2%	34.9%	1.54	0.1%
1999	1,582	23.1%	34.4%	1.53	-1.3%
2003	2,223	1.0%	30.0%	1.43	0.1%
2008	2,833	7.2%	23.3%	1.30	1.2%

Source: Department of Statistics Malaysia

Although the industrial growth rate became consistent and more stable, but the value addition trend somewhat declined.

Table: Comparison of value addition between first and second IMP

Period	Average Value Added (RM mil)	Average Value Added Annual Growth Rate (%)	Value Added Intensity (%)
First IMP (1986-1995)	**393.7**	**32.8**	**42.4**
MP-5 (1986-1990)	172.0	30.7	49.8
MP-6 (1991-1995)	615.4	34.5	34.9
Second IMP (1996-2004)	**1,875.6**	**11.8**	**28.4**
MP-7 (1996-2000)	1,526.5	21.6	34.0
MP-8 (2001-2004)	2,224.8	5.1	30.0

Source: Department of Statistics Malaysia

5.1 Innovation Process in Wood Sector

The sources of innovation must cover the external factors (such as customer desire and awareness) and internal factors (such as management, human capital, processing and new product development (NDP) and technology) to fulfill the development requirement of innovation in Malaysian wood-based industry.

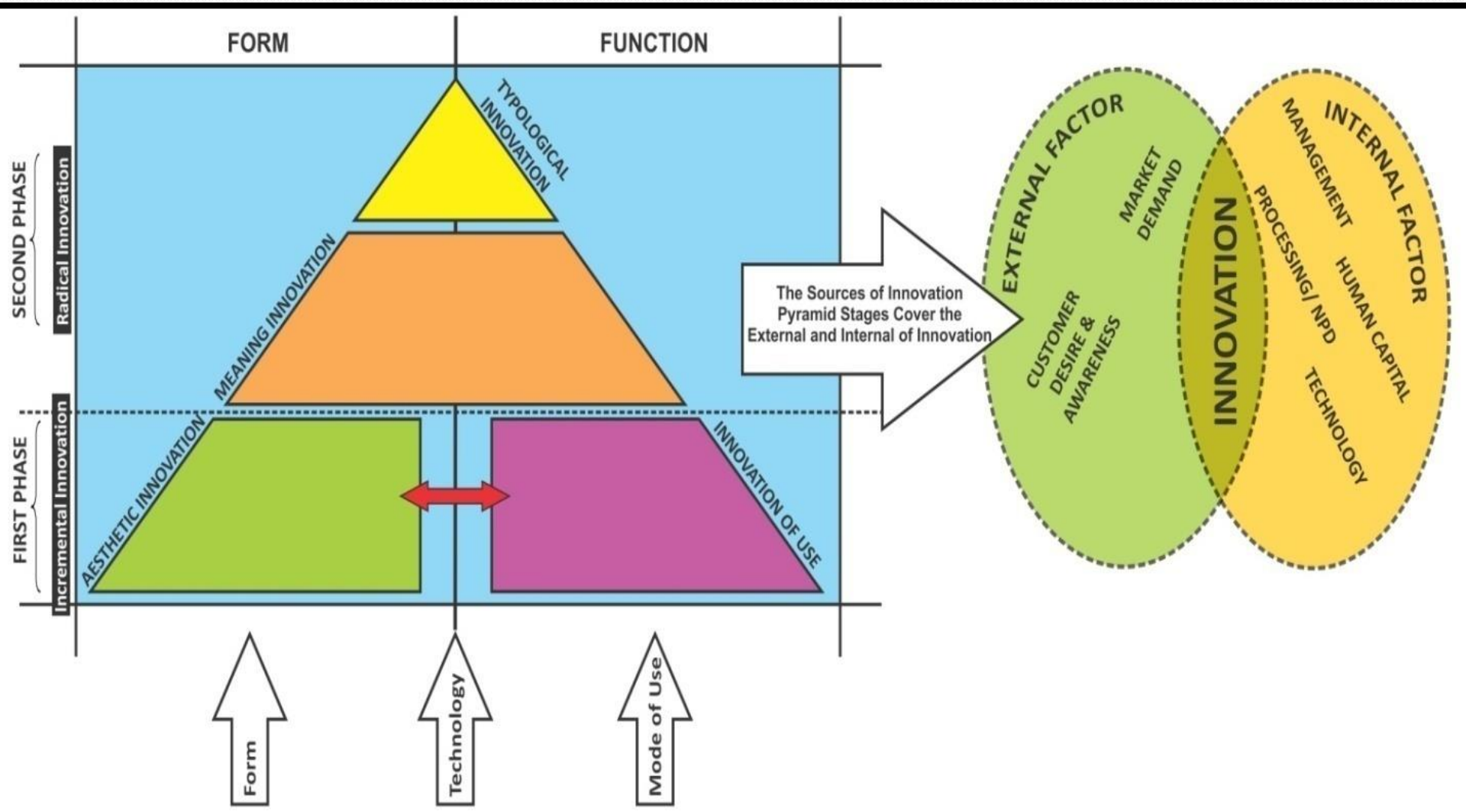


Figure: The Sources of Innovation Pyramid

Malaysian wood-based industry should start with the incremental innovations as the starting phase to build a confident and positive movement and consequently shaping a systematic development progress of innovation process from time to time.

In this early stage, Malaysia should begin to emphasize more on the aesthetics innovation and innovation of use.

The approaches in these two types of sources innovation is believed could minimize the costs, time and compatible with existing manufacturing processes and current technology industry.

5.2 Drivers of Innovation

- **emerging technologies**, that leads to technology innovation or technology-driven process
- **competitor actions**, which encourage advancement of value creation market-driven, especially community toward green concept;
- **new ideas** from customers, strategic partners, and employees, which involve the total workforce; and
- **emerging changes** in the external environment.

6.0 Constraints to Innovation in the Wood Industry

- A number of factors hindered the innovative efforts in the Malaysian wood industry.
- The most significant factors such as **knowledge to innovate**, **marketing and promotion**, and **R&D** were the high cost of innovation, perceived economic risks, a lack of information on markets, uncertainty regarding the demand for innovative goods or services, and a lack of information on technology.
- In general, **cost** and **market related factors** were the two main factors that hampered innovation. They were followed by knowledge-based factors, institutional factors and other factors.

7.0 Growth Strategies

- Value Adding (form vs. function)
- Productivity Increase (human capital)
- Efficiency (technical change)
- Better Use of Materials (proper selection based on market demand)
- Expand the Market (promotion & marketing)

8.0 Lessons for the Sarawak Timber Industry

- Take advantage of the diverse culture – to develop new themes/motive/design for innovative wood product
- Pay attention to resource diversity
- Train competent human capital – that will drive the industry forward
- Move away from traditional commodity product – offer a living concept – not a product
- Expand cluster system to engage SMEs

9.0 Conclusion

The wood industry in Malaysia will remain buoyant as long as the comparative advantage remains intact, but with increasing global competition, shifting towards competitive advantage is crucial in the near future!

For Any Enquiries

Centre of excellence in innovative wood products and market intelligence.

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