



UNIVERSITI PUTRA MALAYSIA

***INNOVATIVENESS OF MALAYSIAN FURNITURE INDUSTRY
AT THE FIRM LEVEL***

LAU LI HAR

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FURNITURE INDUSTRY AT THE FIRM
LEVEL**

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**MASTER OF SCIENCE
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AT THE FIRM LEVEL**

By

LAU LI HAR

**Thesis Submitted to the School of Graduate Studies,
Universiti Putra Malaysia, in Fulfilment of the Requirements for
the Degree of Master of Science**

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I dedicate this thesis to my parents, sisters and most importantly my husband and children for their love and support.



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Abstract of thesis presented to the Senate of Universiti Putra Malaysia
in fulfilment of the requirement for the Degree of Master of Science

INNOVATIVENESS OF MALAYSIAN FURNITURE INDUSTRY AT THE FIRM LEVEL

By

LAU LI HAR

December 2013

Chair: Mohd Shahwahid Othman, PhD

Faculty: Institute of Tropical Forestry and Forest Products

The Malaysian furniture industry is one of the main contributors to the country's economy. However, it is losing its competitiveness and the industry needs to innovate and move up the value chain in order to survive in the competitive global market. In order to help the industry to innovate, more information on its state of innovativeness needs to be gathered. Therefore, the objectives of this study are:

- i. To assess the level of innovativeness of furniture firms.
- ii. To determine the main motivation of innovation.

In order to assess the level of innovativeness of the furniture firms, the types of innovation were identified and defined. This information is then incorporated into the questionnaire, which was used in the interviews with furniture firms in Selangor. Information gathered was analysed using Correspondence Analysis to identify the innovative companies and what variables contribute to their innovativeness. These variables are then used to develop an Innovation Index for each company as well as the furniture sector. During the interviews, furniture firms were also asked on what were the main motivations for undertaking innovation activities. The answers were analysed to determine the main motivations of innovation.

The first round of analysis showed that there are six Innovative companies and five Non-innovative companies. The other companies, which their Innovativeness cannot be determined, are grouped as 'Intermediate'. Among the innovative companies, two types of behaviours towards innovation are observed. The first type is pro-active in seeking information needed for product development from various sources. The second type relies more on government and other companies within their group when carrying out innovation activities. The Non-innovative companies are found to be less

enthusiastic in carrying out innovation activities. Further analysis done on the Intermediate group showed that there are three types of behaviours towards innovation.

The Innovation Index showed that the Innovative companies have higher scores than the Intermediate and Non-innovative companies, except for a company, which is C10. C10, which is an Intermediate company, is found to have higher score than three Innovative companies.

The analysis on motivation showed that the Innovative companies are motivated by two main types of desire in carrying out innovation activities. They are the desire to compete and win (Vengeance) and the desire for social standing and attention (Status). The Intermediate companies are motivated by many more different types of desire compared to the Innovative companies. As for the Non-innovative companies, they are found to be the most affected by the desire to collect and value frugality (Saving) as well as the desire to avoid anxiety and fear (Tranquility).

The level of innovativeness of Malaysian furniture firms has been successfully assessed in this study. The firms are categorised into three levels of innovativeness and the level of innovation is found to be affected by the different types of desire that motivate them. However, the survey was confined to the Selangor area due to time and financial constraints. If the survey is being extended to other states, the innovativeness level, motivation and behaviour towards innovation of furniture firms in different states could be analysed.

Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia
sebagai memenuhi keperluan untuk Ijazah Master Sains

**KEINOVASIAN INDUSTRI PERABOT MALAYSIA PADA PERINGKAT
FIRMA**

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Industri perabot di Malaysia adalah salah satu penyumbang utama ekonomi Negara. Walau bagaimanapun, daya saing industri ini kian merosot dan ia perlu berinovasi dan mencapai tahap rantai nilai yang lebih tinggi untuk bertahan di pasaran dunia yang kompetitif ini. Oleh yang demikian, objektif-objektif kajian ini adalah untuk:

- i. Menilai tahap keinovasian firma-firma perabot.
- ii. Memastikan motivasi utama dalam inovasi.

Untuk menilai tahap keinovasian firma-firma perabot, jenis-jenis inovasi telah dikenalpastikan dan definisinya telah dijelaskan. Maklumat ini digabungkan dalam borang soal selidik yang digunakan semasa sesi temuramah dengan firma-firma perabot di Selangor. Maklumat yang dikumpulkan kemudiannya dianalisis dengan menggunakan 'Correspondence Analysis' untuk mengenal pasti syarikat-syarikat yang inovatif dan apakah pembolehubah-pembolehubah yang menyumbang kepada keinovasian mereka. Pembolehubah-pembolehubah ini kemudiannya digunakan untuk menghasilkan Indeks Inovasi bagi setiap syarikat dan juga sektor perabot. Semasa sesi temuramah, firma-firma perabot telah disoal untuk mengenal pasti motivasi utama untuk menjalankan aktiviti-aktiviti inovasi. Maklum balas yang diterima dianalisis untuk menentukan motivasi utama inovasi.

Analisis pertama menunjukkan terdapatnya enam buah syarikat inovatif dan lima buah syarikat tidak inovatif. Syarikat-syarikat yang selebihnya telah dikategorikan sebagai perantaraan kerana tahap keinovasian yang tidak dapat ditentukan.

Antara syarikat-syarikat inovatif, terdapat dua jenis tingkah laku terhadap inovasi yang telah diperhatikan. Jenis pertama adalah sikap pro-aktif dalam pencarian maklumat yang diperlukan untuk pembangunan produk dari pelbagai sumber. Jenis kedua adalah sikap kebergantungan kepada kerajaan dan syarikat lain di dalam kumpulan syarikat yang sama dalam menjalankan aktiviti-aktiviti inovasi. Syarikat-syarikat tidak inovatif pula didapati kurang bersemangat dalam menjalankan aktiviti-aktiviti inovasi. Analisis lanjut yang dijalankan terhadap kumpulan perantaraan menunjukkan terdapatnya tiga jenis tingkah laku yang berbeza terhadap inovasi.

Indeks Inovasi menunjukkan syarikat-syarikat inovatif mempunyai skor yang lebih tinggi daripada syarikat-syarikat perantaraan dan tidak inovatif, kecuali sebuah syarikat, iaitu C10. C10 yang merupakan sebuah syarikat perantaraan didapati mempunyai skor yang lebih tinggi daripada tiga buah syarikat inovatif.

Analisis ke atas motivasi menunjukkan bahawa syarikat-syarikat berinovasi didorong oleh dua jenis keinginan untuk menjalankan aktiviti-aktiviti inovasi, iaitu keinginan untuk bersaing dan menang (Dendam) serta keinginan untuk kedudukan sosial dan perhatian (Status). Syarikat-syarikat perantaraan pula didorong oleh lebih banyak jenis keinginan berbanding dengan syarikat-syarikat inovatif. Syarikat-syarikat tidak inovatif pula didapati sangat dipengaruhi oleh dua jenis keinginan, iaitu keinginan untuk mengumpul dan berjimat-cermat (Simpanan) serta keinginan untuk menjauhi keresahan dan ketakutan (Ketenangan).

Tahap keinovasian firma-firma perabot di Malaysia telah berjaya dinilai di dalam kajian ini. Firma-firma telah dikategorikan kepada tiga tahap keinovasian dan tahap inovasi dipengaruhi oleh jenis-jenis keinginan yang berlainan. Walau bagaimanapun, soal selidik ini terhad di kawasan Selangor disebabkan oleh kekangan waktu dan kewangan. Jika kajian ini dipanjangkan ke negeri-negeri lain, tahap keinovasian, motivasi dan tingkah laku firma-firma perabot terhadap inovasi di negeri berlainan boleh dikaji.

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This thesis was submitted to the Senate of Universiti Putra Malaysia and has been accepted as fulfilment of the requirement for the degree of Master of Science. The members of the Supervisory Committee were as follows:

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DECLARATION

Declaration by graduate student

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LIST OF ABBREVIATIONS

| | |
|--------|---|
| CA | Correspondence Analysis |
| CIS | Community Innovation Survey |
| CSIL | Centre for Industrial Studies |
| IMP2 | Second Industrial Master Plan |
| IMP3 | Third Industrial Master Plan |
| IVC | Innovation Value Chain |
| MASTIC | Malaysian Science and Technology Information Centre |
| MPI | Ministry of Primary Industries, Malaysia |
| MPIC | Ministry of Plantation Industries and Commodities, Malaysia |
| MTIB | Malaysian Timber Industry Board |
| NATIP | National Timber Industry Policy |
| NESTA | National Endowment for Science, Technology and the Arts |
| NSI | National Survey of Innovation |
| OECD | Organisation for Economic Cooperation and Development |
| OEM | Original Equipment Manufacturing |
| SMEs | Small and Medium Enterprises |
| SMIDEC | Small and Medium Industries Development Corporation |

CHAPTER 1

INTRODUCTION

1.1 General Background

The furniture industry is one of the major contributors of the country's export earnings. In fact, Malaysia is the ninth largest exporters of furniture in the world (CSIL, 2009). In 2012, the country's export of wooden and rattan furniture amounted to RM6.55 billion (MPIC, 2012), an increase of ten times the export value achieved 20 years ago, which was RM660.6 million in 1992 (MPI, 1993). The export value of furniture in 2012 constitutes of 32.4% of the country's total export of major timber products.

Malaysia is rich with natural resources and was once a top exporter of logs and timbers. Since then, the country has diversified into downstream processing such as furniture and panel products. During the First Industrial Master Plan (1986-1995), the main activities of the timber industry were driven by the production of logs, sawntimber and plywood (NATIP, 2009). The Second Industrial Master Plan (1996-2005), however, saw a shift of main activities from upstream processing to downstream processing. Furniture took over logs, sawntimber and plywood as the main contributor of the timber industry's growth. The furniture sector has also recorded a remarkable average growth rate of 11% per annum in this period. In the Third Industrial Master Plan (2006-2020), exports of the country's timber industry are targeted to grow at an average rate of 6.4% to reach a total of RM53 billion by 2020. The furniture and panel products, such as MDF and plywood are targeted to be the main contributors of this growth.

1.2 The Malaysian Furniture Industry

Furniture has always been one of the biggest sectors, in terms of exports, in the wood-based industry. In fact, it is the catalyst of the wood-based industry (SMIDEC, 2002). The furniture sector achieved an average annual rate of growth at 11%, which amounted to RM5.8 billion during the Second Industrial Master Plan or IMP2 (NATIP, 2009). The growth was mainly due to the readily available raw materials at competitive prices, relatively low labour costs and a continuous growth of the international timber market. However, all these advantages that aided the boom in the furniture industry, particularly the raw material supplies, have since diminished. Without these advantages, the furniture industry is now struggling for its survival let alone helping the timber industry to achieve the target of RM53 billion set by the Third Industrial Master Plan (IMP3).

The timber industry, including the furniture sector, is now relying heavily on cheap foreign labour to sustain its competitiveness in terms of price. It is estimated that at least a third of the production workers in the timber industry are foreigners (SMIDEC, 2002). With the recent announcement by the government to reduce the country's dependency on foreign labours, the industry needs to look at other long-term solutions such as automation and attracting more local workers to work in the sector. Ultimately, all these are going to increase the production costs and if the industry remains as a low cost producer, they cannot sustain their businesses.

The issue of timber shortage has surfaced more than a decade ago and it is one of the main concerns of the whole industry. The government, on realising this issue, took on various initiatives to augment raw material supply such as initiated the forest plantation project and set up a Special Purpose Vehicle, *i.e.*, the Forest Plantation Development Sdn. Bhd. and waived the import duty of raw materials to reduce the cost of importing. The forest plantation programme receives positive results from the industry but it will take at least another 15 years before plantation timber will come into the market. An immediate solution to the shortage problem is to import. This measure, however, will not help to solve the rising production cost issue as the costs of importing are always increasing and the profit margin will always be shrinking if manufacturers continue to compete on price basis alone.

The increase in global awareness on environment and safety issues has put on extra pressures to the industry. More and more standards and regulations are being imposed to ensure the sustainability of forests and to protect human health. Japan's regulation on formaldehyde emission, the U.S.'s Lacey Act to control the illegal trade of wildlife and plants, Third Industrial Master Plan (IMP3) to control the spread of pests, and the Green Building Index are examples of such regulations and standards which have serious implications on the Malaysian timber industry.

Malaysia's furniture industry is still the main sector in the timber industry but its position as the top exporter in the world is being replaced by the emergence of low cost producers such as Vietnam. In 1999, Malaysia was the 8th largest exporter in the world, with a market share of 2.8% while Vietnam was at number ten with 0.6% market share. In 2008, Malaysia's ranking drop to number nine with 2.2% market share, while Vietnam took over the number seven spot with 2.9% market share (Table 1). Malaysia is already losing its competitiveness and if the industry continues to do business the way they are doing now, it is afraid that Malaysia will not be able to maintain its top ten spot in the world furniture market.

Table 1. Market Share of the Major Exporting Countries

| Ranking | Country | Market Share, 1999 (%) | Country | Market Share, 2008 (%) |
|---------|-----------------|------------------------|-----------------|------------------------|
| 1. | Italy | 16.8 | China | 23.0 |
| 2. | Germany | 9.2 | Italy | 11.4 |
| 3. | Canada | 7.8 | Germany | 9.6 |
| 4. | China | 5.6 | Poland | 6.8 |
| 5. | United States | 4.9 | United States | 3.5 |
| 6. | France | 4.4 | Canada | 3.2 |
| 7. | Poland | 3.9 | Vietnam | 2.9 |
| 8. | MALAYSIA | 2.8 | France | 2.9 |
| 9. | United Kingdom | 2.7 | MALAYSIA | 2.2 |
| 10. | Vietnam | 0.6 | United Kingdom | 1.3 |
| 11. | Japan | 0.4 | Japan | 0.8 |
| 12. | Others | 40.9 | Others | 32.3 |
| | TOTAL | 100 | TOTAL | 100 |

(Source: CSIL, 2009)

The furniture industry in Malaysia is still considered a commodity business and most of the exporters are competing in the segment where the profit margin is low and gain is obtained by selling at higher volume. To move away from this, manufacturers need to carve distinct product identity in the marketplace to rise above the clutter. This process does not only involve product design and quality but the entire business processes such as strategic planning, procurement of raw materials, marketing and service delivery. In another words, the industry needs to innovate.

Innovation is the key ingredient for success in today's competitive global business environment (MASTIC, 2006). In recognising this importance, Malaysia implement various programme to improve the country's level of innovativeness. It was evident in the Fifth Malaysia Plan (1986-1990), in which a separate chapter was devoted to science and technology for the first time (Lee & Lee, 2007a). The government has also improved the financing of innovation-related activities through grants and tax incentives. At the same time, the government carries out the National Survey of Innovation (NSI) to measure the level of innovativeness of the country's manufacturing sector.

The NSI was developed based on the guidelines and questionnaire design provided in the Oslo Manual and the Community Innovation Survey (CIS). The NSI was carried out for the following periods:

- NSI-1: 1990-1994
- NSI-2: 1997-1999
- NSI-3: 2000-2001
- NSI-4: 2002-2004
- NSI-5: 2005-2008

According to the latest NSI report (NSI-4), furniture firms constitute only 5.2% of the total innovative firms in Malaysia. The most innovative sector is the food products and beverages (10.1%), followed by the rubber and plastic products (8.0%) and, the television and communication equipment and apparatus (6.8%). The survey allows the government to assess the state of innovativeness in the country and the effectiveness of the programme implemented in order to make the country a scientifically and technologically developed economy by 2020. The survey also allows the benchmarking of Malaysia to the European countries as the methodology used in the NSI followed closely those used by the CIS (MASTIC, 2006).

1.3 Problem Statement

The Malaysian furniture industry is one of the main contributors to the country's economy and Malaysia is one of the top ten largest furniture exporter in the world. However, the industry is losing its competitiveness with the emergence of low cost producers such as China and Vietnam because of rising cost and dwindling supply of resources (MTC, 2004; and Nor, Tamyez, & Nasir, 2012). The two countries have more market share than Malaysia in the world furniture market since 2008 (Table 1).

The Malaysian furniture industry relies heavily on rubberwood, which has been a very important driver of the industry's development (SMIDEC, 2002). However, it is perceived as a low value timber thus rubberwood furniture is unable to reach the higher-end segment of the market (MTC, 2004).

Apart from relying heavily on rubberwood, Malaysian furniture industry is characterised by Original Equipment Manufacturing (OEM) (SMIDEC, 2002). In the OEM system, firms produce products according to their buyers' precise specification and they have very low cost production to compete with their competitors (Bojei, Othman & Yeap, 2002).

The industry competes primarily on price basis because of the use of low value timber and the OEM system, which have shaped the industry into a low profit margin sector (SMIDEC, 2002). To strengthen its position as a top furniture producer in the world, Malaysia needs to move up the value chain and shift its focus away from competing on price basis (MTC, 2004). Furniture companies need to innovate to gain competitive edge and to avoid competing on price alone (Muhammad, Sharifah & Mastika, 2013; and the Department of Trade and Industry United Kingdom, 2005).

In this industry, new models come out every new season or when a firm takes part at major national or international fairs (Morrison, 2003). In order to be successful, especially in the international market, furniture makers need to churn out new models frequently. This makes new product development crucial to furniture manufacturers, because the furniture industry is not only a commodity-type manufacturing sector but also a fashion-sensitive business (Cao & Hansen, 2006).

When designing new models, changes are made to give the product a new appearance as well as the required form and function. In the process of doing so, design also deals with the technical properties, features associated with ergonomics, functionality, strength, safety and durability of a product (Dziegielewski & Fabisiak, 2008). All these are parts of innovation.

More and more countries recognise the importance of innovation for business and economic growth (Therrien & Mohnen, 2003). As in the case of Malaysia, the government implements various programme to promote innovation activities and carries out the NSI to develop a better understanding of enterprise innovation. However, information on the level of innovativeness at the firm level is lacking and little is known on what motivates the firms to innovate and what is their ultimate goal to innovate. Therefore, this study aims to find out how innovative the Malaysian furniture industry is and what motivates them to innovate. By knowing this, policy makers will be able to plan for a concerted effort in promoting innovation among furniture makers and help them to move up the value chain and away from the low profit margin sector.

1.4 Objectives of the Study

In the previous studies on furniture industry, innovation is considered the ultimate drive for business success (Cao & Hansen, 2006). By contrast, the factors which drive this innovation are less known or varied greatly in different countries (Yrigoyen, 2011; Heanue & Jacobson, 2008; and Cao & Hansen, 2006). The academic perspective of this study is to provide empirical setting to the question of what correlates to this innovation factor and exploratory multivariate analysis will be used to uncover this research. Therefore, the objectives of this study are:

- i. To assess the level of innovativeness of furniture firms.
- ii. To determine the main motivation of innovation.

1.5 Significance of the Study

The main contribution of this study is its addition to the present literature on innovation in the Malaysian furniture industry. Previous studies often analyse innovation in a specific area such as technical innovation or product innovation (Muhammad *et al.*, 2013; Nor *et al.*, 2012; Ngah & Ibrahim, 2009; Morrison, 2003; Lefebvre & Lefebvre, 1993; and Roper, 1997). However, innovation in a manufacturing firm is not limited to only product or technology. Other aspects such as marketing and business practices are also important contributors to a firm's success. To analyse innovation in a more wholistic manner, this study includes different aspects of innovation in manufacturing practices as well as the processes in which innovation is achieved. This enables the proper analysis of a firm's innovativeness and it provides a better framework on innovation for future studies.

Presently, various studies have been carried out on innovation in the furniture industry. However, innovation is often analysed at the industry or sectoral level such as the studies by Ng & Thiruchelvam (2012) and Cao & Hansen (2006) as well as the NSI carried out in Malaysia. As such, little is known about innovation at the firm level. In this study, innovation is examined at the firm level and the innovativeness of each firm is determined. This analysis provides comprehensive understanding on the firms' characteristics that contribute and hamper the success of innovation. This information is useful for the formulation of strategic development programme by the government for the Malaysian furniture industry as well as for future studies on innovation in other manufacturing industries.

Innovation at the firm level is affected by many factors and it is found that there is a robust relationship between individual motives and innovative performance (Sauer mann & Cohen, 2010). This study analyse different types of individual motives that contribute and hamper the success of innovation. This information enables policy makers to formulate strategic development policies to encourage more furniture firms to increase their level of innovativeness and transforming the Malaysian furniture industry to become a productive, competitive and efficient industry to compete in the global market. This will ultimately help the timber industry to achieve its target of RM53 billion by the year 2020.

REFERENCES

- Barlett, James E. II, Kotrlik, Joe W. & Higgins, Chadwick C. (2001). Organizational Research: Determining appropriate sample size in survey research. *Information Technology, Learning, and Performance Journal*. Vol. 19 No. 1.
- Beh, E.J. (2004). Simple correspondence analysis: A bibliographic review. *International Statistical Review*. 72 (2): 257–284.
- Berry, M. J. A. & Linoff, G. S. (2004). *Data Mining Techniques: For Marketing, Sales, and Customer Support*. New York, USA. John Wiley & Sons, Inc.
- Bojei, J., Othman M.S. & Yeap, T.B. (2002). Global marketing strategies: An examination of the Malaysian wooden furniture industry. *Journal of International Business and Entrepreneurship*. Vol 9 (1). pp 57-84.
- Bos-Brouwers, Hilke Elke Jacke. (2009). Corporate sustainability and innovation in SMEs: Evidence of themes and activities in practice. *Wiley InterScience*. doi: 10.1002/bse.652
- Cao, X. & Hansen, E.N. (2006). Innovation in China's Furniture Industry. *Forest Products Journal*. Vol. 56 No.11/12, pp.33-42.
- Centre for Industrial Studies. *World Furniture Outlook 2009/2010*. CSIL Milano, 2009.
- Cohen, W.M. & Sauermann, H. (2007). Schumpeter's Prophecy and Individual Incentives as a Driver of Innovation. In Malerba, F. & Brusoni, S. (Eds.), *Perspectives on Innovation*. (pp. 73-104, 2007). Cambridge. Cambridge University Press. Retrieved from <http://ssrn.com/abstract=2254959>
- Department of Trade and Industry United Kingdom. *Creativity, Design and Business Performance*. DTI Economics Paper No. 15. 2005.
- Dziegielewski, S. & Fabisiak, B. (2008). Furniture design and development of furniture production. *Electronic Journal of Polish Agricultural Universities*. Vol. 11 Issue No. 4. Retrieved from www.ejpau.media.pl/volume11/issue4/art-23.html

- Galia, F. & Legros, D. (2004). Complementarities between obstacles to innovation: Evidence from France. *Research Policy*. Volume 33, Issue 8, Pages 1185–1199. <http://dx.doi.org/10.1016/j.respol.2004.06.004>
- Greenacre, M. J. (1984). *Theory and Applications of Correspondence Analysis*. London: Academic Press.
- Greenacre, M. (2010). *Correspondence Analysis of Raw Data*. Department of Economics and Business, Universitat Pompeu Fabra, Spain. <http://dx.doi.org/10.2139/ssrn.1300338>
- Hashim, M.K., Ali, J. & Fawzi, D.A. (2005). Relationship between human resource practices and innovation activity in Malaysian SMEs. *Jurnal Manajemen & Bisnis Sriwijaya*. Vol. 3 No. 6.
- Heanue, K.P. & Jacobson, D. (2008). Embeddedness and innovation in low and medium technology rural enterprises. *Irish Geography*. Vol. 41, Issue 1. Pp 113-137. <http://dx.doi.org/10.1080/00750770801915612>
- Hilmi, F.Z. & Ramayah, T. (2008). Market innovativeness of Malaysian SMEs: Preliminary results from a first wave data collection. *Asian Social Science*. Vol. 4 No. 12. pp. 42-49.
- Horvarth, A. & Hilgers, D. (2013). Caring about other firms' research and development: intrinsic motivation in cross-industry innovation. Retrieved from <http://ssrn.com/abstract=2336688>
- Husin, R. *Furniture Industry in Malaysia - Status and Market Prospects*. Paper presented at the Seminar on Sabah Furniture Industry – A Potential Hub for Outdoor Furniture, Sabah. September 2012.
- Hussin, H. & Noor, R.M. *Innovating business through E-Commerce: Exploring the willingness of Malaysian SMEs*. Paper presented at the Second International Conference on Innovations in 2005.
- Husson, F., Le, S. & Pages, J. (2011). *Exploratory multivariate analysis by example using R*. CRC Press.

- Ibrahim, A.R., Zolait, A.H.S, Subramanian, S. & Ashtiani, A.V. (2009). Organizational innovative capabilities: An empirical study of Malaysian firms. *Journal of Innovation and Business Best Practices*. Vol. 1, No. 2. pp. 9-18.
- Inkinen, S. & Kaivo-oja, J. (2009). Introduction: Innovation and “innoflation”. *Understanding Innovation Dynamics. Aspects of Creative Processes, Foresight Strategies, Innovation Media, and Innovation Ecosystems*. (pp. 7-8). Helsinki. Finland Futures Research Centre, Turku School of Economics.
- Jaramillo, H., Lugones, G. & Salazar, M. (2001). *Standardisation of Indicators of Technological Innovation in Latin American and Caribbean Countries – Bogota Manual*. Organization of American States. 83p.
- Lee, C. & Lee, C.G. (2007a). Encouraging innovation in Malaysia. Appropriate sources of finance. *CACCI Journal*. Vol. 1, 2007.
- Lee, C. & Lee, C.G. (2007b). SME innovation in the Malaysian manufacturing sector. *Economics Bulletin*. Vol. 12, No. 30. pp. 1-12.
- Lefebvre, L.A. & Lefebvre, E. (1993). Competitive positioning and innovative efforts in SMEs. *Small Business Economics*. Vol. 5. pp. 297-305.
- Lin, H.F. (2007a). Effects of extrinsic and intrinsic motivation on employee knowledge sharing intentions. *Journal of Information Science*. Vol. 33: 135-149.
- Lin, H.F. (2007b). Knowledge sharing and firm innovation capability: An empirical study. *International Journal of Manpower*. Vol. 28 Iss: 3/4, pp.315 - 332
- Litwin, M. (1995). How to measure survey reliability and validity. California, U.S.A. Sage Publications, Inc.

Malaysia Furniture Entrepreneur Association. *Member Directory*. 2009.

Malaysian Science and Technology Information Centre. *National Survey of Innovation (NSI) 2002-2004*. Ministry of Science, Technology and Innovation, Malaysia. 2006.

Malaysian Timber Council. *Study on enhancing the sectoral linkages between the upstream and downstream timber industries in Peninsular Malaysia*. Kuala Lumpur. 2004.

Malaysian Timber Industry Board and the Malaysian Furniture Industry Council, 2009. *Official Directory*.

Ministry of Plantation Industries and Commodities, Malaysia. *Statistics on Commodities*. Putrajaya. 2012.

Ministry of Primary Industries, Malaysia. *Statistics on Commodities*. Kuala Lumpur. 1993.

Mohamed, M.Z. (1995). Innovation implementations in Malaysian firms: Process, problems, critical success factors and working climate. *Technovation*. Vol. 15, Issue 6. pp 375-385.

Morrison, A. *Local systems of innovation in developing countries: Evidence from a Brazilian furniture cluster*. Università del Piemonte Orientale, Novara. 2003.

Muhammad, F.A.A., Sharifah, E.S.S.M.Z., Mastika, L. (2013) Industrial Design Innovation of Sarawak Contemporary Furniture Design. *Procedia Engineering*. Volume 53, Pages 673-682, ISSN 1877-7058, <http://dx.doi.org/10.1016/j.proeng.2013.02.087>.

National Timber Industry Policy 2009-2020. (2009). Ministry of Plantation Industries and Commodities, Malaysia.

Ng, B.K. & Thiruchelvam, K. (2012). The dynamics of innovation in Malaysia's wooden furniture industry: Innovation actors and linkages. *Forest Policy and Economics*. Volume 14, Issue 1. Pages 107-118, ISSN 1389-9341, <http://dx.doi.org/10.1016/j.forpol.2011.08.011>.

- Ngah, R. & Ibrahim, A.R. (2009). The relationship of intellectual capital, innovation and organizational performance: A preliminary study in Malaysian SMEs. *International Journal of Management Innovation*. Vol. 1, No. 1: E1.
- Nor, N.M., Tamyez, P.F & Nasir, S.J.A. (2012). A conceptual framework on the relationship between furniture design and branding strategy-performance relationship in Malaysian exporting furniture firms. *Online Journal of Social Sciences Research*. Vol. 1, Issue 2, pp. 42-48; Retrieved from <http://www.onlineresearchjournals.org/JSS/pdf/2012/apr/Nor%20et%20al..pdf>
- Olson, K. R., & Weber, D. A. (2004). Relations between Big Five traits and fundamental motives. *Psychological Reports*. 95, 795-802.
- Osborne, J.W., & A.B. Costello. (2004). Sample size and subject to item ratio in principal components analysis. *Practical Assessment, Research and Evaluation*. 9 (11): 8.
- Persatuan Pengusaha Kayu Kayan & Perabot Bumiputra Malaysia, 2009. *Member Directory*
- Rajman, M., Peristera, V., Chappelier, J.-C., Seydoux, F. & Spinakis, A. (2002). *6^{es} Journées internationales d'Analyse statistique des Données Textuelles*.
- Read, A. (2000). Determinants of successful organisational innovation: A review of current research. *Journal of Management Practice*. Vol 3, No. 1. pp 95-119.
- Reiss, S. (2000). Why people turn to religion: A motivational analysis. *Journal for the Scientific Study of Religion*. 39, 47-52.
- Reiss, S. (2004). Multifaceted nature of intrinsic motivation: The theory of 16 basic desires. *Review of General Psychology*. 8 (3): 179–193.
- Reiss, S., Wiltz, J., & Sherman, M. (2001). Trait motivational correlates of athleticism. *Personality and Individual Differences*. 30, 1139-1145.

Roda, J.-M., Cadène, P., Guizol, P., Santoso, L. & Fauzan, A.U. *Atlas of wooden furniture industry in Jepara, Indonesia*. French Agricultural Research Centre for International Development and Center for International Forestry Research. Jakarta. 2007

Roda, J.-M., Tan, L.L., Hidayah, R.N., Lau, L.H., Rohana, A.R., Fauzi, A.P., Ismariah, A., Jalaluddin, H., Wong, T.M., Ong, L.L. & Nizam, M.H., *Domestic Trade of Timber and Timber Products in Peninsular Malaysia*. Forest Research Institute Malaysia, Malaysian Timber Industry Board, Malaysian Timber Council, Ministry of Plantation Industries and Commodities, Ministry of Natural Resources and Environment. Kuala Lumpur. 2011.

Roper, S. (1997). Product innovation and small business growth: A comparison of the strategies of German, U.K. and Irish companies. *Small Business Economics*. Vol. 9. pp 523–537.

Salazar, M. & Holbrook, A. (2004). A debate on innovation surveys. *Science and Public Policy*. Vol. 31, No. 4. pp 254-266.

Sauermann, H. & Cohen, W.M. (2010). What Makes Them Tick? Employee Motives and Firm Innovation. *Management Science*. Vol. 65, No. 12, pp. 2134-2153. Retrieved from http://papers.ssrn.com/sol3/papers.cfm?abstract_id=1632629

Small and Medium Industries Development Corporation. *Definition of SMEs*. (2012). Retrieved 28 April 2012 from <http://www.smecorp.gov.my/v4/node/14>

Small and Medium Industries Development Corporation. *SMI Development Plan 2001-2005*. Kuala Lumpur. 2002.

Souitaris, V. (2001). Strategic influences of technological innovation in Greece. *British Journal of Management*. 12: 131–147. doi: 10.1111/1467-8551.00190

StatSoft, Inc. (1997). *Electronic Statistics Textbook*. Tulsa, OK: Retrieved from <https://www.statsoft.com/Textbook/Data-Mining-Techniques#eda>

- Tether, B. S. & Tajar, A. 2008. The organisational-cooperation mode of innovation and its prominence amongst European service firms. *Research Policy*. Vol 37. Issue 4. Pages 720-739. <http://dx.doi.org/10.1016/j.respol.2008.01.005>
- Therrien, P. & Mohnen, P. (2003). How innovative are Canadian firms compared to some European firms? A comparative look at innovation surveys. *Technovation*. Vol 23. pp 359–369.
- Tidd, J., Bessant, J. & Pavitt, K. (2005). *Managing Innovation – Integrating Technological, Market and Organizational Change*. John Wiley & Sons, Ltd. Chichester.
- Yrigoyen, J.I. (2011). Stimulus factors on innovativeness in traditional micro and small enterprises: An exploratory study on Peruvian furniture firms. *Business Innovation and Technology Management (APBITM)*, 2011. IEEE International Summer Conference of Asia Pacific. Vol. no., pp. 88-94. <http://dx.doi.org/10.1109/APBITM.2011.5996299>
- Zhao, N. (2009). *The Minimum Sample Size in Factor Analysis*. *Research Methods*. Retrieved from <http://www.encorewiki.org/display/~nzhao/The+Minimum+Sample+Size+in+Factor+Analysis>
- Zhao, L. (2012). Investigation into Motivation Types and Influences on Motivation: The Case of Chinese Non-English Majors. *English Language Teaching*. Vol. 5, No. 3. <http://dx.doi.org/10.5539/elt.v5n3p100>