

WOODEN HOMEOWNERS ATTITUDE AND PREFERENCES FOR TIMBER AS A BUILDING MATERIAL AT BACHOK, KELANTAN

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By

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DEDICATION

IN THE NAME OF ALLAH, MOST GRACIOUS, MOST MERCIFUL

THIS IS ESPECIALLY DEDICATED TO

MY BELOVED PARENTS,

ABDUL MANAF BIN SULAIMAN & SITI KHOTIJAH BT YUSOF

MY SIBLINGS,

MOHD ARIFF & MUHAMAD AMIRUL ASYRAF

MY FRIENDS,

HAJAR, RUZIATUL, SHUD, UMMU, JAEN, NINA, EYDA, PIKA, ILA

&BSTK MATES

"THANKS FOR ENCOURAGEMENT AND SUPPORT"

ABSTRACT

Malaysia is a timber-rich country but the use of timber products in construction industry are still lacking. There are many reasons that make Malaysian not really interested in timber as building material. This include because of poor and inconsistent quality of timber, association with low social status of citizen, as well as high cost of material. Even that timber may be more environmentally sustainable building material, the perception of homeowners and consumer may not really match with reality. This study was carried out to determine attitude of wooden homeowners towards timber as building materials and to know the preferences of wooden homeowners towards timber as building materials. A total of 288 respondents who's staying in Bachok, Kelantan participated in this research of which 132 were males and 156 are females. Based on the findings, most wooden homeowners have positive attitude towards timbers as building materials but on preferences they have preferred to choose non-wooden house compared to wooden house. In terms of attitudes, they have a negative attitude towards the characteristics of timber such cheaper wood prices, the application is unlimited and not easily attacked by insects or insects. Thus, it make their preferences from timber material shifted to non-timber material such concrete, brick, cement and others. On preferences, most of respondent not preferring timber because the stable and durability of non-timber, material price of timber are expensive, non-wooden house is more unique and attractive then the lack of skilled manpower or carpenter of wooden house. Professionals in the construction industry will need to constantly update new technology or knowledge in wood to upgrade the quality of wood as a building material. In addition, timber sector needs to be promoted to educate people about the quality, maintenance and durability of timber as material in construction

ABSTRAK

Malaysia adalah negara yang kaya dengan kayu tetapi penggunaan produk kayu dalam industri pembinaan masih kurang memuaskan. Terdapat banyak punca yang menjadikan rakyat Malaysia tidak begitu berminat dengan kayu sebagai bahan binaan. Ini termasuklah kerana kualiti kayu yang rendah dan tidak konsisten, dengan status sosial yang rendah, serta kos bahan yang tinggi untuk industri pembinaan. Walaupun kayu mungkin bahan binaan yang lebih mesra alam mengikut persepsi pemilik rumah dan pengguna mungkin tidak sepadan dengan realiti. Kajian ini dijalankan untuk menentukan sikap pemilik rumah kayu terhadap kayu sebagai bahan binaan dan untuk mengetahui keutamaan pemilik rumah kayu ke arah kayu sebagai bahan binaan. Seramai 288 responden yang tinggal di Bachok, Kelantan telah mengambil bahagian dalam kajian ini yang mana 132 adalah lelaki dan 156 wanita. Berdasarkan kajian ini, kebanyakan pemilik rumah kayu mempunyai sikap positif terhadap kayu sebagai bahan binaan tetapi dengan keutamaan mereka memilih rumah bukan kayu berbanding rumah kayu. Dari segi sikap, mereka mempunyai sikap yang negatif tedapat ciri-ciri kayu iaitu harga kayu lebih murah, aplikasi tidak terhad dan tidak mudah diserang oleh serangga atau serangga. Oleh itu, ia membuat pilihan mereka dari bahan binaan kayu beralih kepada bahan bukan kayu seperti konkrit, bata, simen dan lain-lain. Atas keutamaan, kebanyakan responden tidak memilih kayu kerana bahan bukan kayu yang stabil dan tahan lama, harga kayu yang mahal, rumah bukan kayu lebih unik dan menarik, dan kekurangan tenaga kerja mahir atau tukang kayu rumah kayu. Selain itu sektor kayu perlu dipromosikan untuk mendidik orang ramai mengenai kualiti, penyelenggaraan serta ketahanan kayu sebagai bahan dalam pembinaan.

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NURUL NAJIHAH BINTI ABDUL MANAF

APPROVAL SHEET

I certify that this research project report entitled "Wooden Homeowners Attitude and Preferences for Timber as a Building Material at Bachok, Kelantan." by Nurul Najihah Binti Abdul Manaf has been examined and approved as a partial fulfillment of the requirements for the Degree of Bachelor of Wood Science and Technology in the Faculty of Forestry, Universiti Putra Malaysia.



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CHAPTER 1

INTRODUCTION

1.1 Background

Peninsular Malaysia has been fortunate to be endowed with extensive areas of valuable natural tropical rainforest which are extremely complex ecosystems are rich in tree species, than in similar areas of Africa and South America (Thang, 1988). Malaysia is a major contributor to the international timber trade. However, the market in Malaysia do not receive much attention as it is are always overshadowed by exports (Bourke, 1991). Even though exports would continue to be the mainstay of the Malaysian timber industry, the government is also encouraging the development of the domestic market to sustain the growth of the country's timber industry (MPIC, 2009).

The major consumer of timber and timber products in the domestic market is the construction industry. Malaysia is a timber-rich country but the use of timber products in the construction industry is still negligible (Wong, 2008). Timber was extensively used in building construction in Malaysia but has been replaced by concrete, brick and block since the 1970s (Marsono & Balasbaneh, 2015). The use of wood in building elements has decreased from 65% before 1970 to only 5% within the last forty years.

There have been a number of case studies which identified timber as most efficient material in terms of carbon emission when compared to reinforced concrete, masonry and

steel construction in residential housing (Nassen *et al.*, 2012). Even the timber may be more environmentally sustainable building material the perception of homeowners and consumer not really match with reality. Homeowner and occupant perception are quite similar to construction professional regarding timber benefit such aesthetics, sustainability and also natural characteristics which negative perception are more focused toward on strength, durability, fire and acoustic performance (Gold, 2009).



1.2 Problem statement

The analysis homeowners as consumer is an important factor in determining the consumer make their purchase decision and in the context of this research which is on homeowner's tastes and preferences that reflects individual's requirements or standards of living and their demand for lifestyle housing.

There are several factors can influence homeowners perspective toward attitude and preferences on the use of timber as a building material. Price is one of the features to be considered. The quality of timber based on structure, aesthetic value, legislative barriers, and durability are the preferences on the homeowner. These preferences differ out regards to their gender, age, income, level of education and others.

However, the problems regarding this study are about the declining use of wood as building material. In rural areas, timber is used as main building material but with diminishing number of timber craftsmen have caused the use of concrete and masonry materials to increase (Ismail *et al.*, 2008). There has been of lack attention given by the local timber manufactures to use timber as material construction and less promotion in local market to use timber for building material (MPIC, 2009). To encourage future homeowner to use timber, we have to understand attitude and preferences of wooden homeowners towards timber as building material.

1.3 Objective

The objectives of this study are:

- To identify the attitude of wooden homeowners toward timber as a building material.
- To determine the preferences of wooden homeowners toward timber as a building material.



REFERENCES

Aathaworld. (2017). *Wood For Your Building*. Retrieved from <u>https://www.aathaworld.com/single-post/2017/03/26/Why-use-Wood-for-Your-Building</u> on November 18, 2017.

Abeysuriya, N. (2014). A Study on the feasibility of using built up timber construction in Sri Lanka.

Baiden, B. K., Badu, E., & Menz, F. S. (2005). Exploring the barriers to the use and potential of timber for housing construction in Ghana. *Construction and Building Materials*, 19(5), 347-352.

Berger, G., Katz, H. & Petutschnigg, A.J. (2006). What consumers feel and prefer: Haptic perception of various wood flooring surfaces. *Forest Products Journal* 56(10): 42-47.brick-197850191.

Bourke, I. J. (1991). Domestic timber markets: important outlets for the developing countries. *Unasylva (FAO)*.

Broman, N.O. (2000). Means to measure the aesthetic properties of wood. Doctoral thesis perception of various wood flooring surfaces. *Forest Products Journal* 56(10): 42-47.

Craig, A., Abbott, L., Laing, R., & Edge, M. (2002). Assessing the acceptability of alternative cladding materials in housing: theoretical and methodological challenges. In *17th Conference of the International Association for People-Environment Studies, La Coruna, Spain* (pp. 23-27).

Davies, I., Walker, B. & Pendlebury, J. (2002). *Timber Cladding in Scotland*. ARCA Publications Ltd. Edinburgh, Scotland.

Desa, A. M. (2008). Constructing Timber Architecture: Merging the Skills of Architect, Carpenter and Masonry Workers.

Domone, P., & Illston, J. (Eds.). (2010). Construction materials: their nature and behaviour. CRC Press.

Fell, D., J. Thomas, & E. Hansen. (2006). Evolving Consumer Preferences for Residential Decking Materials. *The Forestry Chronicle* 82(2): 253-258.

Forest Products Research Institute. (1988). Construction and Decorative Timber of Ghana *Forest Products Research Institute*, Buletin No. 3; 1988. FPRI.

Gibler, K., & Nelson, S. (2003). Consumer behavior applications to real estate education. *Journal of Real Estate Practice and Education*, 6(1), 63–83.

Gold, S., & Rubik, F. (2009). Consumer attitudes towards timber as a construction material and towards timber frame houses–selected findings of a representative survey among the German population. *Journal of Cleaner Production*, *17*(2), 303-309.



Hanna, N., & Wozniak, R. (2001). *Consumer behavior: An Applied Approach*. New Jersey: Prentice Hall cop.

Høibø, O. & Nyrud, A.Q. (2010) Consumer perception of wood surfaces: the 4 relationship between stated preferences and visual homogeneity. Journal of Wood Sciences 56(4): 276–283.

Hutton, T. C., Lloyd, H., & Singh, J. (1992). The environmental control of timber decay. *Structural Survey*, *10*(1), 5-20.

Ismail, S., Abdul Malek, D., & Syed Ahmad Iskandar, S. A. (2008). A study of constructing timber architecture: Merging the skills of architect, carpenter and masonry workers. *Jurnal Alam Bina*, 12, 97-108.

Kamarul Syahril Kamal, L. A. (10–12 November 2004). Climatic design of thetraditional Malay house to meet the requirements of modern living . *The 38th International Conference of Architectural Science Association (ANZAScA) "Contextsof architecture"*, . Launceston, Tasmania: University Technology Mara, Perak, Malaysia.

Kotler, P, Armstrong, G, Saunders, J, Wong, V. (2001). *Principles of Marketing*. Pearson Education Limited, London, UK.

Malaysian Timber Industry Board. (2011). Sustainability of Resources for Wood-BasedIndustry,Retrievedfromhttp://www.perdana.org.my/ceoforum/wp-content/uploads/2012/09/Norchahaya-Hashim.pdf on 24 October 2017.

Marsono, A. K. B., & Balasbaneh, A. T. (2015). Combinations of building construction material for residential building for the global warming mitigation for Malaysia. *Construction and Building Materials*, 85, 100-108.

McGar, J. (2015). *Timber vs Steel vs Concrete Structures*. Retrieved from <u>https://sourceable.net/timber-vs-steel-vs-concrete-structures/</u> on 5 November, 2017

Ministry of Plantation Industries and commodities Malaysia (2009). National Timber Policy 2009-2020. Kuala Lumpur

Nässén, J., Hedenus, F., Karlsson, S., & Holmberg, J. (2012). Concrete vs. wood in buildings–An energy system approach. *Building and environment*, *51*, 361-369.

Nordin, T. E., Husin, H. N., & Kamal, K. S. (2005). Climatic Design Feature in the Traditional Malay House for Ventilation Purpose. In *Proceedings of International Seminar Malay Architecture as Lingua Franca* (pp. 22-23).

Nyrud, Anders Q., Anders Roos, & Jon Bingen Sande. (2008). Residential bioenergy heating: A study of consumer perceptions of improved woodstoves. *Energy Policy* 36, no. 8: 3169-3176.

Nyrud, Anders Q., Tina Bringslimark, & Finn Englund. (2008). Wood use in a hospital environment: VOC emissions and air quality. *European Journal of Wood and Wood Products* 70, no. 4: 541-543.

C

O'Connor, J., Kozak, R., Gaston, C., & Fell, D. (2004). Wood use in nonpresidential buildings: Opportunities and barriers. *Forest products journal*, 54(3), 19.

Ross, P., Downes, G., & Lawrence, A. (2009). *The appeal of timber*. Retrieved from RIBA Enterprises Ltd <u>https://www.thenbs.com/knowledge/the-appeal-of-timber</u> on 11 November 2017.

Salonvaara, M., Ojanen, T., & Simonson, C. (2004). Indoor air quality in a wooden house.

Sanusi Hassan, A., (2001). Towards Sustainable Housing Construction in Southeast Asia. Journal *Seminar Malay Architecture as Lingua Franca* (pp. 22-23).

Scheffer, T. C., & Morrell, J. J. (1998). *Natural durability of wood: A worldwide checklist of species*. Corvallis, Or.: College of Forestry, Forest Research Laboratory, Oregon State University.

Schiffman, L. G., & Kanuk, L. L. (1978). Consumer Behavior, Prentice Hall, Inc. New Jersey.

Sinclair, S. A., & Smith, P. M. (2007). Product awareness and physical risk perceptions of consumers of treated lumber. *Wood and fiber science*, 22(1), 80-91.

Smith, R.E., & W.R. (1983). Attitude-Behaviour Consistency: The Impact of Product Trial Versus Adverting. *Journal of Marketing Research*, 267-267.

Statistics Norway. (2013). Population and Housing Census, Dwellings, Retrieved from https://www.ssb.no/en/befolkning/statistikker/ fobbolig on 29 October 2017.

Sufian, C. A., & Sabrizaa, A. R. M. (2009). An analysis of the traditional malay architecture as indicators for sustainability: An introduction to its genius loci. In *Proceeding of Arte-Polis 3rd International Conference on Creative Collaboration and the Making of Place*.

Swan, C., & Kareken, J. (1971). Labor and material requirements for housing. *Brookings Papers on Economic Activity*, 1971(2), 347-381.

Thang, H. C. (1988). Selective management system: Concept and practice (Peninsular Malaysia). *Forestry Department Headquarters, Kuala Lumpur*.

Vasanen, A. (2012). Beyond stated and revealed preferences: the relationship between residential preferences and housing choices in the urban region of Turku. *Journal of Housing and the Built Environment* 27(3): 301-315.

Wong, T.M. (2008). Ensuring quality assurance in timber applications. *Master Builder Journal*.1st Quarter: 84-87.

Yuan, L. J. (1979). Relief of Climatic Stress in Housing in Malaysia. Architect Journal, 4, 79.

Yuan, L. J. (1987). The Malay house: Rediscovering Malaysia's indigenous shelter system. Institut Masyarakat.