UNIVERSITI PUTRA MALAYSIA

FORECASTING AVAILABILITY AND CONSUMPTION OF RUBBERWOOD IN PENINSULAR MALAYSIA

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FORECASTING AVAILABILITY AND CONSUMPTION OF RUBBERWOOD IN PENINSULAR MALAYSIA

By

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Chair: Professor Mohd. Shahwahid Haji Othman, PhD
Faculty: Faculty of Economics and Management

Rubberwood sawntimber has become one of the major contributors to the Malaysian furniture export and economic growth in the past two decades as its demand from wooden furniture manufacturing has increased tremendously. However, the availability of rubberwood sawntimber would not meet industry’s demand. Therefore there is a need to examine and to identify the availability of rubberwood sawntimber in fulfilling the demand.

For this purpose, up-to-date information on availability and consumption of rubberwood sawntimber in Malaysia is important. Factors affecting availability and consumption of rubberwood sawntimber are identified through the multiple regression model. The availability and consumption of rubberwood sawntimber are forecasted for five years ahead from 2008 to 2012 through three models that have been identified among the best forecasting technique which is multiple
regression, Box-Jenkins and composite model that combine both models. The composite model is applied to balance the limitation of each model in order to get the best estimate forecasts. With each of the strengths of these two methods, using them together as one method will generate the most reliable forecast value.

The results of the regression analyses have been statistically diagnosed and modified to generate the best models. Availability of rubberwood sawntimber is influenced by replanted area, price of rubberwood log, latex price and previous production of rubberwood sawntimber. Consumption of rubberwood sawntimber is influenced by national income and prices of other light hardwood species that are mainly consumed by sawmills, i.e. Dark Red Meranti and Red Meranti

In forecasting availability and consumption of rubberwood sawntimber statistical evaluation of all of the three models shows an acceptable result which means these models could give reliable forecasts. Both multiple regression and Box-Jenkins model in forecasting availability and consumption of rubberwood sawntimber in Malaysia are reliable due to the smaller error and a closer value between forecasts and actual values compared to previous forecasts. The composite model makes the forecast values more reliable and stable and this proves that this model balance the strength and weaknesses of both forecasting techniques and is able to generate the best estimated forecasts.
The results also indicate that the rubberwood sawntimber is experiencing deficit. Therefore the concern on shortages and that production is no longer able to cater to demand is true based on the result of the multiple regression and composite model. As for the Box-Jenkins model result, production of rubberwood sawntimber was still able to cater to the demand for the rubberwood sawntimber until the year 2010 but will be deficit starting the year 2011.
Abstrak tesis yang dikemukakan kepada Senat Universiti Putra Malaysia sebagai memenuhi keperluan untuk ijazah Master Sains

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Kayu getah begergaji merupakan salah satu penyumbang utama kepada eksport perabot di Malaysia dan pertumbuhan ekonomi negara pada dua dekad yang lalu kerana peningkatan besar permintaan perabot kayu. Walaubagaimanapun kayu getah begergaji telah berkurangan dan oleh sebab itu, mengetahui dan mengenalpasti keadaan kayu getah begergaji ialah sangat penting untuk memenuhi permintaan.

Untuk tujuan ini, maklumat terkini berkenaan keadaan dan penggunaan kayu getah begergaji di Malaysia ialah penting. Faktor-faktor yang mempengaruhi keadaan dan penggunaan kayu getah begergaji telah dikenalpasti melalui model regresi berbilang manakala unjuran keadaan dan penggunaan kayu getah begergaji telah dibuat untuk tempoh lima tahun akan datang dari 2008 hingga 2012 menggunakan tiga model yang telah dikenalpasti antara teknik unjuran...
terbaik iaitu regresi berbilang, Box-Jenkins dan model komposit yang menyatukan kedua-dua model ini. Model komposit diaplikasi untuk menyeimbangkan kelemahan kedua-dua model untuk mendapatkan nilai unjuran terbaik. Dengan kekuatan kedua-dua kaedah ini, menggunakan kedua-duanya di dalam satu kaedah akan menghasilkan nilai unjuran yang paling tepat.

Keputusan analisis regresi telah diuji dan diolah untuk menghasilkan model-model yang terbaik. Keadaan kayu getah begergaji dipengaruhi oleh kawasan penanaman semula pokok getah, harga kayu balak getah, harga susu getah dan keadaan kayu getah begergaji terdahulu. Penggunaan kayu getah begergaji pula dipengaruhi oleh pendapatan dan harga lain-lain kayu dalam spesis yang sama dengan kayu getah yang paling banyak digunakan oleh kilang-kiland kayu iaitu Meranti Merah Tua dan Meranti Merah

Penilaian statistik dalam unjuran keadaan dan penggunaan kayu getah begergaji menunjukkan keputusan yang signifikan daripada ketiga-tiga model dan ini bermaksud model-model ini berupaya menghasilkan unjuran yang tepat. Model regresi berbilang dan Box-Jenkins dalam membuat unjuran keadaan dan penggunaan kayu getah begergaji adalah relevan melihat kepada jumlah perbezaan yang lebih kecil dan nilai unjuran yang lebih dekat dengan nilai sebenar berbanding unjuran terdahulu. Model komposit membuatkan nilai unjuran lebih tepat dan stabil dan ini membuktikan bahawa model ini
menyeimbangkan kekuatan dan kelemahan kedua-dua teknik unjuran dan berupaya untuk menghasilkan unjuran yang terbaik

Keputusan turut menunjukkan, masalah kekurangan wujud dalam keadaan kayu getah beergaji. Oleh sebab itu kebimbangan mengenai kekurangan kayu getah beergaji dan penghasilannya tidak lagi mampu untuk memenuhi permintaan adalah betul berdasarkan keputusan-keputusan daripada model regresi berbilang dan komposit. Manakala untuk model Box-Jenkins, penghasilan kayu getah beergaji masih mampu menampung permintaan sehingga 2010 tetapi mula berkurangan bermula tahun 2011.
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I certify that an Examination Committee has met on 14 April 2011 to conduct the final examination of Noor Hazmira Merous on her thesis entitled "Forecasting Availability and Consumption of Rubberwood in Peninsular Malaysia" in accordance with the Universities and University College Act 1971 and the Constitution of the Universiti Putra Malaysia [P.U.(A) 106] 15 March 1998. The committee recommends that the student be awarded the Master of Science.

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DECLARATION

I declare that the thesis is my original work except for quotations and citations which have been duly acknowledged. I also declare that it has not been previously, and is not concurrently, submitted for any other degree at Universiti Putra Malaysia or at any other institution.

(Noor Hazmira Merous)

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