SEKOLAH SISWAZAH
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PENENTUAN HARGA TARIF ELEKTRIK :
AMALAN OLEH SYARIKAT ELEKTRIK INDONESIA

SYAMSIR ABDUH

T E S I S

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PENGAKUAN

"Saya akui karya ini adalah hasil saya sendiri kecuali nukilan dan ringkasan yang tiap-tiap satunya telah saya jelaskan sumbernya".

15 Julai 2002

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PENENTUAN HARGA TARIF ELEKTRIK : AMALAN OLEH SYARIKAT ELEKTRIK INDONESIA

Abstrak

Kajian ini bertujuan mengenalpasti perkaitan harga tarif elektrik di Indonesia dengan faktor-faktor yang berkorelasi ke atas penentuan harga kos marginal, perakaunan kos, dan waktu penggunaan kepada empat kelompok pelanggan, iaitu kelompok pelanggan residensial, industri, komersial dan kelompok pelanggan sosial. Harga tarif elektrik menjadi pembolehubah bersandar, manakala penggunaan tenaga, pengeluaran tenaga, kos penjanaan purata, harga bahan bakar, penjualan tenaga, kuasa bersambung, pendapatan wilayah dan beban puncak menjadi pembolehubah tidak bersandar. Data pembolehubah-pembolehubah diperolehi daripada Syarikat Elektrik Indonesia (PLN) seluruh Indonesia (27 Wilayah) dalam tempoh 1990-1999. Data dianalisis dengan menggunakan kaedah regresi berganda berbilang prosedur "*stepwise*". Hasil kajian pada ***pendekatan kos marginal*** menunjukkan pembolehubah kos penjanaan purata, harga bahan bakar, beban puncak, kuasa bersambung, pendapatan wilayah dan penjualan tenaga berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan residensial. Kos penjanaan purata, harga bahan bakar dan pendapatan wilayah adalah berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan industri. Pembolehubah kos penjanaan purata, harga bahan bakar, penggunaan tenaga, dan kuasa bersambung berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan komersial. Manakala bagi kelompok pelanggan sosial didapati pembolehubah kos penjanaan purata, penjualan tenaga, harga bahan bakar dan pendapatan wilayah berkorelasi signifikan terhadap harga tarif elektrik. Kajian menggunakan ***pendekatan perakaunan kos*** menunjukkan pembolehubah kos penjanaan purata, harga bahan bakar, beban puncak, kuasa bersambung, pendapatan wilayah dan penjualan tenaga berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan residensial. Kos penjanaan purata, harga bahan bakar dan pendapatan wilayah juga menunjukkan hubungan yang signifikan terhadap harga tarif elektrik pada kelompok pelanggan industri. Pembolehubah kos penjanaan purata, harga bahan bakar, penggunaan tenaga, dan kuasa bersambung berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan komersial. Manakala bagi kelompok pelanggan sosial didapati pembolehubah kos penjanaan purata, penjualan tenaga, harga bahan bakar dan pendapatan wilayah berkorelasi signifikan terhadap harga tarif elektrik. Hasil kajian ***pendekatan waktu penggunaan*** menunjukkan pembolehubah kos penjanaan purata, harga bahan bakar, beban puncak, kuasa bersambung, pendapatan wilayah dan penjualan tenaga berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan residensial. Kos penjanaan purata, harga bahan bakar, pendapatan wilayah, dan kuasa bersambung adalah berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan industri. Pembolehubah kos penjanaan purata, pengeluaran tenaga, harga bahan bakar, dan beban puncak berkorelasi signifikan terhadap harga tarif elektrik pada kelompok pelanggan komersial. Manakala bagi kelompok pelanggan sosial didapati pembolehubah kos penjanaan purata, penjualan tenaga, harga bahan bakar dan pendapatan wilayah berkorelasi signifikan terhadap harga tarif elektrik. Kajian juga menunjukkan model harga tarif elektrik di tiap-tiap wilayah berbeza-beza sama ada mengikut kelompok pelanggan mahupun mengikut wilayah.

ELECTRICITY TARIFF PRICE : NATIONAL ELECTRIC COMPANY OF INDONESIA

Abstract

This study is to examine the relationship of tariff price in Indonesia between correlated factors *marginal cost pricing, cost accounting pricing* and *the time of use pricing* charged on the four groups of consumer: residential, industrial, commercial and social group customer. The electricity tariff price is the dependent variable whereas the energy consumption, energy production, average generation cost, fuel price, energy revenue, power connected, regional income and peak load are independent variables. Data are obtained from the National Electric Company (PLN) covering the entire 27 provinces of Indonesia over a period (1990-1999). The data are analyzed using multiple regressions with stepwise procedure. The study on ***the marginal cost approach*** shows that the following variables: average generation cost, fuel price, peak load, power connected, regional income and energy revenue correlate significantly with electricity tariff price on residential customer group. The study reveals that the average generation cost, fuel price and regional income correlate significantly with electricity tariff price on the industrial customer group. For commercial customer group, average generation cost, fuel price, energy consumption and power connected correlate significantly with electricity tariff price. For social customer group, it is found that average generation cost, energy revenue, fuel price, and regional income correlate significantly with electricity tariff price. The ***cost accounting approach*** shows that average generation cost, fuel price, peak load, power connected, regional income and energy revenue correlated significantly with the electricity tariff price on the residential customer group. The average generation cost, fuel price and regional income correlate significantly when industrial customer group. Likewise, the average generation cost, fuel price, energy consumption and power connected have significant correlation with electricity tariff price on commercial customer group. In social customer group, such as variables fuel price, average generation cost, energy revenue, fuel price and regional income correlate significantly with electricity tariff price. The ***time of use approach***, shows that average generation cost, fuel price, peak load, power connected, regional income and energy revenue have significant correlation with electricity tariff price on the residential customer group. Electricity tariff price on the industrial customer group is significantly affected by average generation cost, fuel price, regional income, and peak load while on the commercial customer group the variables of average generation cost, energy production, fuel price, and peak load correlate significantly with electricity tariff price. For social customer group, the average generation cost, energy revenue, fuel price and regional income correlate significantly with electricity tariff price. The study also shows that electricity tariff price model for varies according to consumer group or province.

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Syamsir Abduh

Isi Kandungan

Senarai Rajah dan Jadual

M.S.

Rajah :

Jadual :

Senarai Istilah

Aliran Kos
Harga Dinamik, Semerta dan Masa Benar
Kadar Pulangan
Keperluan Kewangan
Kos Marginal
Modal Simpanan
Pasaran Terbuka
Pendapatan Benar per kapita
Pendapatan Bolehguna
Pendapatan Perseorangan
Penjana Kuasa
Penyelarasan Aliran
Perakaunan Kos
Peralatan Isi Rumah
Permintaan Dijangka
Sistem Hasil
Tarif Dua Bahagian
Tarif Tiga Bahagian
Waktu Beban Puncak dan Di Luar Beban Puncak
Waktu Penggunaan

Senarai Lambang dan Singkatan Perkataaan

A	*index of real whole sale price*
BPS	Biro Pusat Statistik/*Statistics Indonesia*
C	*total kos*
cd	*Darjah dingin harian*
CPI	*Index Harga Pengguna*
D	*Permintaan elektrik*
Di	*Permintaan elektrik sektor industri*
F	*Kos tetap*
e	*Ralat piawai*
ETAM	*Mekanisme Penyelarasan Tarif Elektrik*
FP	*Harga bahan bakar*
g	*Harga gas*
GDRP	*Keluaran Regional Dalam Negeri Kasar*
GEN	*Purata kos penjanaan*
GWh	*Giga Watt Hour*
H	*Saiz purata isi rumah*
hd	*Darjah panas harian*
Hcsub	*Subsisi antara daerah*
HPP	*Harga Asas Penjualan*
K	*Peratusan penjanaan dikeluarkan*
kWh	*Kilowatt hour*

L	*Kos buruh*
LRMC	*Kos marginal jangka panjang*
MDBS	*Multilateral Development Banks*
MVA	*Mega Volt Ampere*
MW	*Megawatt*
N_c	*Bilangan pelanggan*
P	*Harga elektrik*
PE	*Produksi tenaga*
P_{et} =*ETP*	*Harga tarif elektrik*
P_m	*Harga marginal elektrik*
PL	*Beban puncak*
PLN	Perusahaan Listrik Negara/ *National electric Company of Indonesia*
Pub	*Syariakt Elektrik Awam*
PWC	*Kuasa bersambung*
Q = CE	*Penggunaan elektrik*
R	*percentage of housing unit*
REV	*Penjualan tenaga*
S	*stock capital of electricity equipment*
SRMC=SMC	*Marginal kos jangka pendek*
Sys	*Penjualan elektrik secara langsung*
t	*time subscript*
T	*cukai*
TDL	*Tarif Asas Elektrik*

TOU	*Waktu penggunaan*
TNB	Tenaga National Berhad/*National Electric Company of Malaysia*
TTLB	*Tarif Tenaga Elektrik Berkala*
U	*Bekalan kWh*
μ	*Ralat piawai*
Unreg	*Tarif tanpa undang-undang*
V	*Kos berubah*
W_h	*Penjualan elektrik*
Y	*Pendapatan benar per kapita*
Z_i	*Faktor institusi*
ψ	*Kadar penggunaan*

Senarai Lampiran

BAB 1

PENGENALAN

1.1 Pendahuluan

Secara umum rancangan suatu sistem tarif elektrik haruslah memenuhi sifat adil, praktis, menghasilkan pulangan munasabah, dan dapat diterima pengguna keseluruhan serta menarik (Abdul Kadir 1992). Adil bermaksud semua pelanggan memiliki hak yang sama, meskipun tingkat keperluan tenaga elektriknya berbeza. Berdasarkan perbezaan tingkat keperluan pelanggan tenaga elektrik dikelompokkan berdasarkan penggunaan bagi mencapai keadilan dalam menentukan tarif elektrik (Berg & John 1988). Kelompok pelanggan tertentu dibebani tarif lebih besar dari harga asas, maka ini mengakibatkan subsidi antara kelompok pelanggan.

Praktis dalam sistem tarif bermaksud bahawa dalam melakukan pengukuran dan perhitungan tenaga terpakai sebaiknya menggunakan peralatan yang tidak terlalu canggih dan mahal, sehingga memudahkan dalam hal pengukuran mahupun sistem pentadbirannya.

Sistem tarif juga harus menghasilkan pulangan yang munasabah. Iaitu, jumlah yang perlu dibiayai oleh pelanggan boleh menutupi keseluruhan kos pengeluaran dan pembekalan tenaga elektrik bersama dengan pulangan yang munasabah. Ini dilakukan untuk syarikat elektrik untuk memperolehi keuntungan yang sesuai. Ini memastikan syarikat pembekal tenaga elektrik dapat terus beroperasi dan memberikan perkhidmatan terbaik seperti mana yang diharapkan oleh pelanggan.

The contents of the thesis is for internal user only

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