

A COOPERATIVE AND NON-COOPERATIVE GAME THEORY
APPROACH IN MANUFACTURER-RETAILER
SUPPLY CHAIN

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**A COOPERATIVE AND NON-COOPERATIVE GAME THEORY APPROACH IN
MANUFACTURER-RETAILER SUPPLY CHAIN**

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Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk **A COOPERATIVE AND NON-COOPERATIVE GAME THEORY APPROACH IN MANUFACTURER-RETAILER SUPPLY CHAIN** No. Matriks: **UK 13807** telah diperiksa dan semua pembetulan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Matematik sebagai memenuhi sebahagian daripada keperluan memperolehi Ijazah Sarjana Muda Sains Matematik Kewangan, Fakulti Sains dan Teknologi, UMT.

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DECLARATION

I hereby declare that this final year project entitled A Cooperative and Non-cooperative Game Theory Approach in Manufacturer-retailer Supply Chain is the result of my own research except as cited in the references.

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A COOPERATIVE AND NON-COOPERATIVE GAME THEORY APPROACH IN MANUFACTURER-RETAILER SUPPLY CHAIN

ABSTRACT

In this paper, numerous manufacturer–retailer supply chain models are anticipated which incorporate equally cost factors as well as elements of competition and cooperation between manufacturer and retailer. We assume that unit marketing expenditure and unit price charged by the retailer manipulate the demand of the product being sold. The dealings between manufacturer and retailer will be modeled by non-cooperative and cooperative games, correspondingly. The non-cooperative game is based on the Stackelberg strategy solution perception, where we reflect on separately the case when the manufacturer is the principal (Manufacturer-Stackelberg) and as well when the retailer is the principal (Retailer -Stackelberg). Pareto efficient solutions will be provided for the cooperative game model.

PENGAPLIKASIAN TEORI PERMAINAN BEKERJASAMA DAN TIDAK BEKERJASAMA DALAM RANTAI BEKALAN PENGELUAR-PERUNCIT

ABSTRAK

Dalam kertas ini, beberapa model rantai bekalan pengeluar-peruncit dicadangkan di mana kedua-dua faktor kos serta unsur-unsur bagi persaingan dan kerjasama antara pengeluar dan peruncit akan dipertimbangkan. Kita menganggap bahawa perbelanjaan pemasaran unit dan harga unit yang dikenakan oleh peruncit mempengaruhi permintaan produk yang dijual. Hubungan antara pengeluar dan peruncit akan dimodelkan menggunakan teori permainan tidak bekerjasama dan permainan kerjasama. Teori permainan tidak bekerjasama adalah diasaskan oleh konsep penyelesaian strategi Stackelberg, di mana kita menimbangankan kes persaingan apabila pengeluar adalah pokok (Stackelberg-Pengeluar) dan juga apabila peruncit adalah pokok (Stackelberg-Peruncit). Rumusan Pareto cekap akan disediakan untuk model permainan bekerjasama.