



## INTISARI

Jumlah unit usaha mikro kecil menengah di Indonesia terus mengalami peningkatan besar sejak tahun 1997, dan terus berkembang saat ini. Diantara usaha mikro, usaha kecil, dan usaha menengah, usaha mikro merupakan jenis usaha dengan unit yang paling banyak dan paling mengalami peningkatan, salah satunya adalah industri rumah tangga atau yang disebut *home industry*. Namun, akibat munculnya wabah Covid-19 dan peraturan PSBB dari pemerintah, banyak UMKM yang terdampak dan mengalami penurunan. Hal ini menyebabkan banyaknya pelaku industri mikro kecil dan menengah yang mulai memindahkan pemasaran ke *platform digital*, dan membeli segala keperluan perdagangan secara *online*.

Penelitian ini berusaha mencari solusi optimal untuk menentukan pemasok untuk tiga eselon secara *online*, yaitu untuk tier 2, tier 1, dan tier 0 atau bahan mentah, bahan siap pakai, dan produk akhir, serta alokasi bagi setiap bahan. Pencarian solusi optimal bertujuan untuk meminimalkan total biaya yang terdiri dari biaya unit dan biaya transportasi, memaksimalkan nilai ulasan toko, dan memaksimalkan persentase transaksi berhasil toko *supplier online* tersebut. Hal ini dilakukan dengan optimasi menggunakan *goal programming* dan *preemptive goal programming* dengan *multi-objectives*.

Penelitian ini berhasil membangun model matematis terkait pemilihan *supplier* dan alokasi jumlah pesanan untuk kasus tiga eselon pada rantai pasok *home industry*, khususnya pada produsen “*Salmon Mentai Food*”. Penelitian ini juga berhasil memberikan dua buah rekomendasi solusi pemilihan *supplier* dan alokasi order pada suatu studi kasus, dimana terdapat 60 *demand* porsi makanan “*Salmon Mentai*” di Tangerang Selatan, Indonesia. Selain itu, penelitian ini juga berhasil memberikan perbandingan *flow* optimal bahan mentah menjadi bahan siap pakai, dan bahan siap pakai menjadi produk akhir, dan sampai pada lokasi akhir, berdasarkan hasil perhitungan dengan metode *goal programming* dan metode *preemptive goal programming* pada studi kasus.

Kata kunci: *Supplier Selection*, *Alokasi Order Quantity*, *Home Industry*, *Usaha Mikro Kecil dan Menengah*, *Goal Programming*, *Online Supplier Selection*, *Multi-Echelon*, *Supply Chain Problem*.



## ABSTRACT

The number of micro, small, and medium enterprise (Usaha Mikro, Kecil, dan Menengah / UMKM) in Indonesia has experienced a major increase since 1997, and continues to grow until now. Among micro businesses, small businesses, and medium businesses, micro businesses are the types of businesses with the most units and have experienced the most improvement, including home industry. However, due to the emergence of the Covid-19 outbreak and “Pembatasan Sosial Berskala Besar” regulations from the government of Indonesia, many small businesses were affected and suffered a setback. This caused many micro, small, and medium industry players to start marketing their industry in digital platforms, and buy all their needs online.

This study tries to seek the optimal solution to select a supplier for each of the three echelon, which is tier 0, tier 1, and tier 2, or the supplier for submaterials, materials, and finished product online. This study also tries to seek the optimum quantity order allocation of each submaterial and material. The goal of this optimization is to minimize the total cost, which consists of unit price and transportation cost, to maximize the supplier’s review assessment, and also to maximize the supplier’s succeeded transaction assessment. The optimization is done by solving a multi-objective problem using goal programming method.

This research successfully built a mathematical model related to the supplier selection and quantity order allocation problems, for multi-echelon cases in the supply chain of home industry, especially “Salmon Mentai Food” industries. This study also succeeded in providing two recommendations of suppliers selection and order allocation for a study case, where there were 60 demands of product from South Tangerang, Indonesia. In addition, this research also provides the comparison between the existing condition and the two recommendation flows of subcomponent, component, and end product, until its arrival at customer’s hands, based on the results of the calculations done using goal programming and preemptive goal programming methods.

**Keywords:** Supplier Selection, Order Quantity Allocation, Home Industry, Small to Medium Enterprise, Goal Programming, Online Supplier Selection, Multi-Echelon, Supply Chain Problem