PENERAPAN METODE *ANALYTIC NETWORK PROCESS* (ANP) DAN *TECHNIQUE FOR ORDER PREFERENCE BY SIMILARITY TO IDEAL SOLUTION* (TOPSIS) DALAM PEMILIHAN *SUPPLIER*
(Studi Kasus PT. Industri Telekomunikasi Indonesia, Bandung)

ABSTRAK

Keberhasilan dalam pemenuhan bahan baku, bahan pembantu, dan komponen pendukung ditentukan oleh kemampuan dari *supplier*. *Supplier* merupakan bagian dari rantai pasok yang berpengaruh terhadap kelangsungan hidup suatu perusahaan manufaktur. Pemilihan *supplier* adalah salah satu kegiatan paling penting dari suatu perusahaan, karena pembelian bahan baku dan komponen mewakili 40 sampai 80 persen dari total biaya produk dan berdampak terhadap kinerja perusahaan. Seiring dengan berjalannya proyek TITO, PT. INTI membutuhkan material-material yang digunakan dalam penggantian kabel tembaga dengan kabel *fiber optic* yang dibeli melalui mitra atau *supplier*. Untuk memperoleh *supplier* dalam proses pengadaan barang maka perlu dilakukan pemilihan dan penilaian *supplier*. Metode *Analytic Network Process* (ANP) dapat dijadikan alternatif untuk suatu permasalahan yang mempunyai banyak kriteria yang saling berkaitan atau berpengaruh dalam pengambilan keputusan. Konsep lain yang banyak digunakan pada beberapa model pengambilan keputusan multi kriteria untuk menyelesaikan masalah keputusan secara praktis adalah *Technique for Order Preference by Similarity to Ideal Solution* (TOPSIS). Terdapat sembilan kriteria yang digunakan dalam pemilihan *supplier*, yaitu kriteria pengiriman, kualitas, pelayanan, fleksibilitas, finansial, hubungan, administrasi, kesehatan dan keselamatan kerja (K3), dan lingkungan. Kriteria-kriteria tersebut dikelompokkan ke dalam tiga *cluster*. *Cluster supplier's performance*, *supplier's features*, dan *supplier's safety and enviromental*. *Cluster supplier's performance* terdiri dari kriteria pengiriman, kualitas, pelayanan, dan fleksibilitas. C*luster supplier's features* terdiri dari finansial, hubungan, dan administrasi. C*luster supplier's safety and enviromental* terdiri dari K3 dan lingkungan. Berdasarkan pembobotan kriteria menggunakan ANP, kriteria yang paling besar pengaruhnya dalam pemilihan *supplier* adalah kriteria pengiriman sebesar 31%. Selanjutnya untuk penentuan rangking *supplier* dilakukan dengan menggunakan metode TOPSIS yang bobot kriterianya didapatkan dari proses metode ANP. *Supplier* material kabel terbaik yang diperoleh dari metode TOPSIS adalah PT. Communication Cable System Indonesia (CCSI).

Kata kunci: Pemilihan *supplier*, *Analytic Network Process* (ANP), *Technique for Order Preference by Similarity to Ideal Solution* (TOPSIS).

APPLICATION OF ANALYTIC NETWORK PROCESS (ANP) AND TECHNIQUE FOR ORDER PREFERENCE BY SIMILARITY TO IDEAL SOLUTION (TOPSIS) METHOD IN SUPPLIER SELECTION (Case Study PT. Industri Telekomunikasi Indonesia, Bandung)

ABSTRACT

Success in fulfilling the raw materials, auxiliary materials, and supporting components is determined by the ability of the supplier. Supplier is part of the supply chain that affect the survival of a manufacturing company. Supplier selection is one of the most important activities of a company, as the purchase of raw materials and components represent 40 to 80 percent of the total cost of the product and the impact on corporate performance. Over TITO project, PT. INTI requires materials that are used in the replacement of copper cables with fiber optic cables that are purchased through a partner or supplier. To obtain suppliers in the procurement process, it is necessary to selection and evaluation the supplier. Analytic Network Process (ANP) can be used as an alternative to solve a problem that has many interrelated criteria or influence in decision-making. Another concept that is widely used in several multi-criteria decision making model to solve problems in a practical decision is Technique for Order Preference by Similarity to Ideal Solution (TOPSIS). There are nine criteria used in supplier selection, the criteria are delivery, quality, service, flexibility, financial, relationships, administration, health and safety (K3), and environmental. These criteria are grouped into three clusters. Supplier's performance, supplier's features, and the supplier's safety and enviromental cluster. Supplier's performance cluster consists of delivery, quality, service, and flexibility. Supplier's features cluster consist of financial, relationship, and administration. Supplier's safety and enviromental cluster consists of K3 and environment. Based on the weighted criteria using the ANP, criteria that most influence the supplier selection is delivery (31%). Furthermore, to determine the ranking of suppliers is done by using TOPSIS method, criteria weights obtained from ANP method. The best supplier of material obtained from TOPSIS method is PT. Communication Cable Systems Indonesia (CCSI).

Keywords: *Supplier selection, Analytic Network Process (ANP), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS).*