INTISARI

Pandemi COVID-19 yang terjadi pada penghujung tahun 2019 merupakan salah satu disrupsi global yang memberikan dampak besar terhadap sistem rantai pasok di seluruh dunia. Berbagai sektor industri seperti pariwisata, migas, garmen, penerbangan komersial, dan lain lain mengalami kerugian besar akibat disrupsi ini. Beberapa industri garmen di Indonesia yang memiliki *supplier tier* 1 dan *tier* 2 di Tiongkok mengalami kesulitan dalam memperoleh bahan baku akibat *supplier* yang berhenti beroperasi. Hal ini pun juga dialami oleh PT Sport Glove Indonesia, sebuah manufaktur sarung tangan yang berlokasi di Kabupaten Sleman, Daerah Istimewa Yogyakarta. Selain COVID-19, beberapa disrupsi rantai pasok baik skala besar maupun kecil juga kerap terjadi dan memberikan gangguan pada jaringan rantai pasok PT Sport Glove Indonesia.

Sebagai upaya untuk mengantisipasi maupun pemulihan ancaman disrupsi ini, beberapa strategi diterapkan guna menciptakan sistem rantai pasok yang *robust* dan resilien. Terdapat tiga strategi utama yang diamati pada penelitian ini, yaitu: strategi *sourcing*, strategi resiliensi, dan strategi *supply base.* Strategi *sourcing* dilakukan dengan menerapkan sistem *single* atau *multi sourcing* dalam pengadaan bahan baku. Kemudian, strategi resiliensi dilakukan dengan menerapkan dua parameter resiliensi yaitu *collaborative* dan *visibility* pada jaringan rantai pasok. Sedangkan strategi *supply base* dilakukan dengan mengatur alokasi pembelian bahan baku yang optimal pada *primary supplier, backup supplier,* dan *spot market purchasing*.

Analisis kuantitatif dilakukan untuk mengevaluasi penerapan ketiga strategi terhadap jaringan rantai pasok PT Sport Glove Indonesia. Analisis ini dilakukan dengan membangun model *two-stage stochastic programming* yang mengakomodasi 128 skenario disrupsi. Model ini juga mengakomodasi pengkategorian dua jenis disrupsi, yaitu *Low Impact High Frequency* (LIHF) dan *High Impact Low Frequency* (HILF). Berdasarkan hasil analisis, ketiga strategi terbukti efektif dalam mewujudkan sistem rantai pasok yang resilien. Dibandingkan dengan kondisi awal, penerapan ketiga strategi memberikan total biaya yang lebih kecil sekaligus memberikan *service level* maksimum.

Kata kunci: Resiliensi rantai pasok, skenario disrupsi, *two stage stochastic programming, collaborative, visibility*

ABSTRACT

COVID-19 pandemic that occurs at the end of 2019 is considered one of global disruption that affect greatly on several supply chain system around the world. Various industrial sector such as tourism, oil & gas, garment, airline, etc. having a abundant profit loss considering the disruption that happens. Several industrial garment in Indonesia which having a tier 1 and tier 2 supplier in China were struggling on getting the material supply because of sudden stop on supplier's operation. This also happen to Sport Glove Indonesia Ltd., a working gloves manufacturer that settles in Sleman Regency, Special Region of Yogyakarta. Beside COVID-19, several supply chain disruptions that considered either low or big scale are sometimes occurs on the company's supply chain system.

As attempt on both anticipation and recovery of disruption threat, several strategies applied in order to creating a resilient and robust supply chain system. There are three primary strategies were considered on this research such as: sourcing strategy, resilience strategy, and supply base strategy. Sourcing strategy is done by applying either single or multiple sourcing on material supply. Then, resiliency strategy is done by implementing two resiliency parameters which is 'collaborative' and 'visibility' on the supply chain network. Whereas supply base strategy is accommodated by allocating optimal material supply on several source that consist of primary supplier, backup supplier, and spot market purchasing.

Quantitative analysis conceded to evaluate the application of three strategies on the Sport Glove Indonesia Ltd.'s supply chain network. Analysis is done by developing a two-stage stochastic programming model that accommodate 128 disruption scenarios. This model also accommodates two type of disruption such as, Low Impact High Frequency (LIHF) and High Impact Low Frequency (HILF). Based on analysis results, the strategies proven to be effective on creating resilient supply chain system. In comparation with the past condition, the implementation of strategies gain a smaller total cost and maximum service level.

Keyword: Supply chain resilience, disruption scenario, two stage stochastic programming, collaborative, visibility