

ABSTRAK

OPTIMALISASI SISTEM DISTRIBUSI MELALUI ANALISIS FMEA UNTUK MEMINIMALISIR KETERLAMBATAN DI PT KARTON BOX

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Distribusi merupakan komponen krusial dalam rantai pasok, khususnya pada industri kemasan seperti karton box yang menuntut ketepatan waktu dan kualitas produk hingga sampai ke pelanggan. Penelitian ini bertujuan untuk menganalisis proses distribusi di PT Karton Box serta mengidentifikasi potensi risiko yang menyebabkan keterlambatan pengiriman. Metode yang digunakan adalah *Failure Mode and Effect Analysis* (FMEA) dengan penilaian tiga parameter utama, yaitu *Severity*, *Occurrence*, dan *Detection*. Nilai dari ketiga parameter dihitung menjadi *Risk Priority Number* (RPN) untuk menentukan prioritas risiko yang memerlukan penanganan segera. Data penelitian diperoleh melalui observasi lapangan, wawancara dengan *supervisor* gudang, koordinator armada, dan manajer logistik, serta studi dokumen perusahaan. Hasil penelitian menunjukkan bahwa terdapat beberapa risiko dominan dengan nilai RPN tinggi, di antaranya keterbatasan kapasitas gudang (RPN 302,2), ketidaksiapan barang saat keberangkatan (RPN 288,0), serta cuaca ekstrem (RPN 264,0). Risiko-risiko tersebut menjadi faktor utama yang berkontribusi terhadap keterlambatan distribusi. Berdasarkan temuan ini, penelitian merekomendasikan strategi mitigasi berupa optimasi tata letak gudang, sinkronisasi jadwal produksi-distribusi, penguatan SOP pemuatan, serta pemanfaatan sistem monitoring distribusi secara *real-time*. Penelitian ini berkontribusi dalam memberikan pemahaman mendalam mengenai risiko distribusi di industri kemasan serta menawarkan solusi praktis untuk meningkatkan efektivitas logistik perusahaan.

Kata Kunci: Distribusi, Keterlambatan Pengiriman, FMEA, Risiko, RPN.

ABSTRACT

OPTIMIZATION OF THE DISTRIBUTION SYSTEM THROUGH FMEA ANALYSIS TO MINIMIZE DELIVERY DELAYS AT PT KARTON BOX

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Distribution is a critical component of the supply chain, particularly in the packaging industry, such as carton boxes, which require punctual delivery and product quality assurance until reaching customers. This study aims to analyze the distribution process at PT Karton Box and identify potential risks that cause delivery delays. The research employs the Failure Mode and Effect Analysis (FMEA) method, assessing three main parameters: severity, occurrence, and detection. These values are combined into the Risk Priority Number (RPN) to determine priority risks requiring immediate mitigation. Data were collected through field observations, interviews with warehouse supervisors, fleet coordinators, and logistics managers, as well as company documentation. The findings reveal several dominant risks with high RPN values, including limited warehouse capacity (RPN 302.2), unprepared goods at departure (RPN 288.0), and extreme weather conditions (RPN 264.0). These risks are identified as the main contributors to distribution delays. Based on the analysis, strategic recommendations include warehouse layout optimization, synchronization of production and distribution schedules, reinforcement of loading SOPs, and the implementation of real-time distribution monitoring systems. This research contributes to providing deeper insights into distribution risks in the packaging industry and offers practical solutions to improve logistics effectiveness in manufacturing companies.

Keywords: *Distribution, Delivery Delay, FMEA, Risk, RPN.*