Supply chain design and unavailabilities management

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***Abstract*— The supply chain is subject to random failures caused by different factors which cause the unavailability of some sites. In this sense, the management of these unavailabilities is becoming a strategic choice to ensure the desired reliability and availability levels of the different supply chain facilities. In this work, we treat two problems related to the field of supply chain, namely the design and unavailabilities management of logistics facilities. Specifically, we consider a stochastic distribution network with consideration of suppliers selection and distribution centres location (DCs) decisions and DCs' unavailabilities management. Our resolution approach consists firstly on define the optimal supply chain structure using an optimization approach based on genetic algorithms (GA), then to simulate the supply chain performance with the presence of DCs failures. Two simulation strategies are performed, one by replace each unavailable DC by the closest DC and the other consist on performing a reallocation using GA. The results of the two strategies are detailed and compared.**

***Key words*— Supply chain management, location-allocation, suppliers selection, genetic algorithms.**

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