Impact analysis of logistics facility relocation using the analytic hierarchy process (AHP)

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Abstract

Facility relocation has a long-term impact on business competitiveness in terms of cost efficiency, service level, and accessibility to marketplace. This paper investigates the impacts of relocating a company’s logistics facility. Specifically, a case study of a logistics service provider for a bank, whose services include cash pick-up and deliveries, and ATM refill, is conducted. Some of the major logistics issues caused by the relocation of the company’s distribution center are identified through process observation and in-depth interview. The analytic hierarchy process (AHP) is implemented to evaluate and rank the importance of the logistics issues according to the needs and requirements of the company’s policy makers. Four criteria considered in the AHP include cost, responsiveness, reliability, and utilization. Results show that, from the company’s perspective, the development of logistics key performance indices is given the highest priority, followed by improvement of internal process, vehicle routing, network design, and inventory management, respectively.

Keywords: analytic hierarchy process (AHP); pick-up and deliveries; banking; logistics; distribution center; transportation

1. Introduction

Effective logistics management ensuring an utmost integrity and punctuality of product delivery has long been considered a vital element for enhancing the competitive edge of a firm. Logistics involves several activities required to move products, services, and information to, from, and between members of a supply chain. Logistics activities may include order processing, inventory control, transportation, warehousing, material handling, packaging, and facility network design (Bowersox et al., 2010). Of importance is transportation, an essential logistics activity that adds value to products through the movement across time and space (Grant et al., 2006). In banking and financial business, where cash is considered as a product, the performance of transportation has a direct impact on cost as well as service level. As a result, there is an apparent need for a robust and prompt