INVENTORY MANAGEMENT SYSTEM FOR RETAILERS

LITERATURE SURVEY

TITLE : Realignment of the physical distribution process in omni-channel fulfillment

AUTHOR : Rafay Ishfaq, C. Clifford Defee and Brian J. Gibson

YEAR : June 2016

ABSTRACT :

The purpose of this paper is to identify the realignment of the physical distribution process for store-based retailers in their efforts to integrate the online channel into their business model. Multiple attributes of the physical distribution process are evaluated to identify associations with order fulfillment methods adopted by omni-channel retailers.

A multi-method approach is used which includes qualitative evaluation of 50 interviews of supply chain executives from large retailers. Additionally, secondary data about firm size, store and distribution networks, online sales, distribution configuration, and order delivery options are used. The findings of qualitative analysis are incorporated into a quantitative classification-tree analysis to identify associations among distribution attributes, order fulfillment methods and order delivery services.

Retailers are developing a consistent omni-channel physical distribution process in which stores undertake a bigger role in order fulfillment and delivery. Level of online sales, size of distribution network, number of sales associates at a store, and number of years engaged in the online channel are identified as having strong associations with the type of order fulfillment method used by omni-channel retailers. The study finds that retailers are focussed on integrating their store and DC inventories and have the benefit of scale with a large store network.

TITLE : Demand uncertainty and inventory turnover performance

AUTHOR: Gülşah Hançerlioğulları, Alper Şen, Esra Ağca Aktunç

YEAR : 2015

ABSTRACT : The purpose of this paper is to investigate the impact of demand uncertainty on inventory turnover performance through empirical modeling. In particular the authors use the inaccuracy of quarterly sales forecasts as a proxy for demand uncertainty and study its impact on firm-level inventory turnover ratios.

The authors use regression analysis to study the effect of various measures on inventory performance. The authors use a sample financial data for 304 publicly listed US retail firms for the 25-year period from 1985 to 2009. Controlling for the effects of retail segments and year, it is found that inventory turnover is negatively correlated with mean absolute percentage error of quarterly sales forecasts and gross margin and positively correlated with capital intensity and sales surprise. These four variables explain 73.7 percent of the variation across firms and over time and 93.4 percent of the within-firm variation in the data.

In addition to conducting an empirical investigation for the sources of variation in a major operational metric, the results in this study can also be used to benchmark a retailer's inventory performance against its competitors.

TITLE : Operations management in multi-channel retailing: an exploratory study

AUTHOR : Alexander Hübner, Andreas Holzapfel, Heinrich Kuhn

YEAR : 2015

ABSTRACT :

Multi-channel (MC) shopping is revolutionizing retail operations. For traditional retailers, the growing importance of online sales means creating new supply chain models. This requires a solid understanding of the operations processes. Current literature on MC management focuses on customer perspectives, but only touches on the operational aspects. The primary goal of this study is therefore to give a comprehensive overview of the operations structures of MC retailing, identify the operations systems in use and analyze their planning interdependencies. We identify network design, inventory management, warehouse operations and capacity management as the areas of MC operations planning. Their planning interdependencies are investigated. We analyze the different MC networks and the associated inventory management approaches as well as the various design concepts in warehouse operations. The efficiency of integrating warehouse operations is the core lever for integrated MC operations. While inventory pooling favors integrated networks, channel-specific operational challenges are a reason to simplify structures and operate separate networks. Specific operational design options (e.g., in picking and scheduling) are identified to optimally complement the network design selected. Company examples also give an idea of how to efficiently design the coordination of on- and offline logistics. Retailers can gain important insights into how to further develop their systems. We used an explorative approach to identify structures and processes in a relatively new research area.

TITLE : Inventory Service Target in Quick Response Fashion Retail Supply Chains

AUTHOR : Tsan-Ming Choi

YEAR : 2016

ABSTRACT :

Different fashion brands have different inventory service targets. To achieve the desirable inventory service level without the need of holding a lot of inventory, fashion companies commonly adopt the quick response practice. In this paper, we conduct an analytical study on the influence played by the inventory service target on quick response fashion retail supply chains. To be specific, we consider the case when the fashion retailer, who is the channel leader, aims to achieve an inventory service target in its inventory planning. We explore impacts of the inventory service-targeted quick response program, in terms of expected profit, and profit risk on the fashion retailer, the fashion manufacturer, and the fashion supply chain system. We also examine the quick response's impact on social welfare. We show how three practical contracts, namely, the fixed-fee contract, the wholesale pricing contract, and the product variety contract, can be employed to achieve a win–win situation in the fashion retail supply chain system with the adoption of the inventory service-targeted quick response program. Closedform managerial insights on how the inventory service target affects the expected benefit of quick response, the reduction of profit risk under quick response, the expected gain of social welfare, the achievability of the win–win situation, and the setting of contractual parameters, are derived.

TITLE : Managing Inventory Systems of Slow-Moving Items

AUTHOR : G.J. Hahn, A. Leucht

YEAR : 2015

ABSTRACT :

Slow-moving demand patterns frequently occur with spare parts as well as items in decentralized retail supply chains with large assortments. These patterns are commonly called lumpy since they exhibit comparably high demand variation and a high fraction of zero-demand events. In this paper, we examine two distribution-based approaches to model lumpy demand processes for inventory control: (i) a generalized hurdle negative binomial model, and (ii) a worst-case non-parametric model that is derived using a test-based approach. Considering a base stock inventory policy, we examine a set of lumpy time series from the industry to exemplify the suitability and benefit of the proposed approaches for managing inventory systems of slow-moving items. Keywords: Forecasting intermittent demand, inventory control, hurdle negative binomial distribution, Panjer recursion, non-parametric models