Chapter 11
Strategies to Predict E–Commerce Inventory and Order Planning

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ABSTRACT

This study examines the characteristics of a prediction model for businesses in the online marketplace by considering the market trend, prior sales and decision maker's preference on potential demand estimate. With the rapid growth of the electronic market, the main challenge for online sellers is the ability to analyze customer expectation, market data, and sales information to make the accurate procurement decision. The proposed model integrates a mathematical structure for a target season sale comprising upcoming demand projection by seller's internal team, data from past sales and the overall trend of seller's e-brand to determine the online customer demand. The study proposed a newsvendor model as a tool for sellers to make the instantaneous decision of ordering merchandise from the supplier when the quick response to the customer order is a priority for electronic market. Results of the study provide insights into the procurement dynamics and implications of the e-commerce inventory plan.

INTRODUCTION

The advance of e-commerce made the online shopping popular among the users. E-commerce brought a trade revolution by providing an information platform for all levels of firms to participate in the online market with the scope of instant communication. The visibility of transaction, abundant information, low investment and low manpower, quick start-up and reduced inventory are the main attraction for the e-commerce growth. The accurate prediction of e-commerce merchandise plays an important role in business success. In particular, demand prediction in the e-commerce market has the task to efficiently

decipher the rhythm of the popularity, market trend and customer expectation. As evident, the businesses use networks for buying and selling goods and services, share information, transfer data and funds on the web system. E-commerce provides many benefits to both sellers and buyers and due to these advantages of the online business model over the traditional physical retailers, the expectations on e-commerce are increasing (Lee et al., 2007). On time delivery- and cost-intensive inventory set-up processes in the e-commerce industry provide the major motivation for customers to purchase their goods online in a more continuous way.

The challenge in e-commerce business is to find applicable inventory management policy to replenish items to meet consumer expectation. Technology is a key enabler to create real-time inventory demand pattern and replenishment policy by transforming traditional inventory practices to strategic point-of-sale e-commerce function. As technology advances, e-commerce business policy should be robust to replenish inventory at right time and at right quantity to keep the business growth effective. The service activities of all delivery requirements upheld on time, whereby priorities for customer orders can be achieved. Several ways e-commerce plays an important role as a business medium. E-commerce operations involve four major markets segments: business to business (B2B), business to consumer (B2C), consumer to consumer (C2C), and consumer to business (C2B). It has allowed firms to establish a market presence by providing a cheaper and more efficient distribution chain for their products or services. However, the central focus of this study is the business-to-customer e-commerce, as defined by Grandon and Pearson (2004): the process of buying and selling products or services using electronic data transmission via the Internet and the www. The study refers to the actual prediction process specific to the consumer demand and therefore falls in the area of operational decisions.

Many e-commerce businesses have successfully achieved tangible improvements in operational efficiency and financial revenue by integrating e-commerce into their value chain activities (Brynjolfsson & Kahin, 2000). However, not all firms have been uniformly successful (Barua & Mukhopadhyay, 2000). A vital practice to have in place in order to be successful in e-commerce is the ability to use prediction model to determine the stock level properly. If there is no standard process in place to predict for future business, the business will never be able to grow. There are several aspects of macro level emphasize on demand forecast ratio to be considered in order to maintain the proper inventory for e-commerce. A major aspect is knowing is knowing the sales and demand data of the product line in the past years. Understanding the customer demand pattern to able to predict what they will want and how much they will need is a breakthrough for success. In order to stock properly for e-commerce, the company should know the current inventory levels, sell-through rates, seasonal peaks, gross margin, product gaps, cash flow and product similarity (Roggio, 2015). Building a relationship and brainstorming between company's policy makers, designers, and the supplier (or manufacturer) representatives can have a significant impact on proper stocking with e-commerce. Popularity information effects online sales. For example, if a product is displayed on the hit list, product sales increase by an average of 1.3 units per day (Yoo et al., 2016). Their research identified the effects of popularity information on product sales through an analysis of the customer category and price. These representatives can project the impact of new design, the new style of customers, current business trend as well as the negotiated terms with delivery times, issues and allocations as necessary. Logistics evaluation and user-centric information systems provide a comprehensive platform to examine the latest strategies and methods for creating technological systems with end users as the focal point of the e-commerce design process (Saeed et al., 2017). E-commerce platform provides small businesses and individuals to launch online storefronts quickly with minimal start-up costs, although competition is intense. E-merchants must build customer trust if they are to sur-

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