



# Build-to-order and just-in-time as predictors of applied supply chain knowledge and market performance

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## Abstract

The research increases our understanding of a build-to-order supply chain (BOSC) by examining the effects of two distinct yet related strategies on applied supply chain knowledge and market performance: a build-to-order (BTO) and a just-in-time (JIT) strategy. The results show that a BTO strategy positively affects market performance through its influence on the application of supply chain knowledge downstream with customers. Although a JIT strategy does affect the upstream application of knowledge with suppliers, the latter does not predict market performance. Theoretical and managerial implications are presented.

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## 1. Introduction

Driven by global competition and the continuing expansion of knowledge, firms are organizing build-to-order supply chains (BOSC) that seek to competitively orient an entire supply chain towards providing near-instant delivery of customized products and services on a mass-scale. Although this ideal may be more-or-less illusive, like Six Sigma, “zero-defects”, or real JIT, it is the journey towards the ideal that matters, not the arrival (Economist, 2001). Dell Computer, Nike, and Toyota are among the organiza-

tions leading this innovative trend and successfully engendering sustainable competitive advantage (Goldhar et al., 1991). Inherent in BOSC strategy is the need to integrate the entire supply chain from upstream suppliers through downstream order and delivery processes. This study examines two key elements inherent in a BOSC: downstream-oriented build-to-order (BTO) strategy and upstream-oriented just-in-time (JIT) strategy.

Fig. 1 presents the theoretical framework of the study. Consistent with strategy preceding practice (Drucker, 1973; Perrow, 1970), this research examines the relationship of BTO strategy with the application of supply chain knowledge related to customers, and the relationship of JIT strategy with the application of

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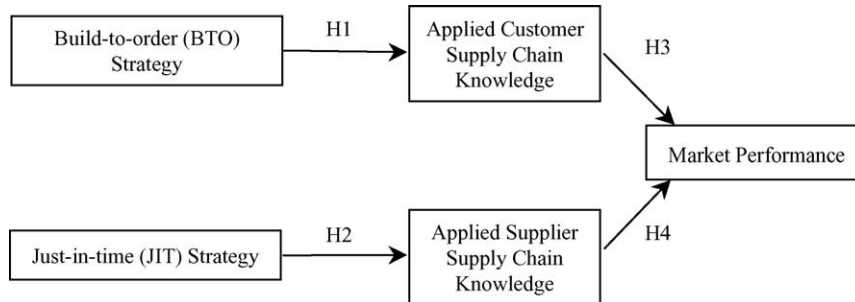


Fig. 1. Research framework and hypotheses.

supply chain knowledge related to suppliers. Since upstream and downstream elements are both inherent in a BOSC it is important that the model include both upstream and downstream supply chain variables. In addition, this research examines the effects of applied customer supply chain knowledge and applied supplier supply chain knowledge on market performance. From a practical perspective, the implications of this study become apparent considering a recent Gartner survey that reports 74% of U.S. auto buyers would prefer to order a customized vehicle rather than buy from a dealer's inventory if they could get delivery in less than 3 weeks (Business Wire, 2001). In addition, Nissan Motor estimates a full implementation of BOSC strategy could save up to \$ 3600 per vehicle (Economist, 2001).

BTO strategy and JIT strategy were chosen due to their strategic alignment with a BOSC and the practical and theoretical need to consider a broader supply chain perspective rather than a single subsystem such as JIT or BTO alone. As Holweg and Miemczyk (2002, p. 829) note, while JIT efforts alone have “fostered undeniable improvements in manufacturing efficiency”, and are consistent in their objectives with BTO strategy, “from the customer's perspective they often have failed due to their myopic focus on the factories”. An upstream-oriented supply chain strategy based on a JIT methodology is ideally suited to complement a downstream-oriented BTO strategy that demands extreme flexibility in product volume, complexity and configuration in dealing with trickle-up effects in a BOSC.

BTO strategy is a priority in the operations literature and to practitioners seeking advantage in the global marketplace (Cleveland et al., 1989; Hayes and Wheelwright, 1984; Krajewski and Ritzman,

1996; Markland et al., 1995; Schmenner, 1981). A BOSC is formed with the purpose of creating a sustainable competitive advantage for all members of the supply chain; an advantage ultimately measured by success in the marketplace. While the study of entire supply chains remains problematic, this study seeks to contribute by simultaneously examining two key components of a BOSC; upstream-oriented JIT strategy and downstream-oriented BTO strategy.

The remainder of the paper is organized as follows. First, the various constructs in the model are defined, theory is presented, and hypotheses are developed. A structural equation model is proposed, and the sampling and statistical methods are presented and explained. This is followed by the results and a discussion of managerial implications and recommendations. Finally, limitations of the research are provided and suggestions are made for further research.

## 2. Theory and hypotheses

### 2.1. The effect of BTO on knowledge

BTO may be defined as the production or assembly of products after orders are received from customers. When viewed along a continuum, the opposite strategy would consist of production in anticipation of demand, usually according to a forecast. BTO strategy has the purpose and objective of providing custom-made (often modularized) products on a mass-scale. The strategy coordinates and integrates a variety of related processes and systems to accomplish this objective. These typically include order customization, customized/modular production, and expedited delivery.

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