

Benefits of CPFR and VMI Collaboration Strategies: a Simulation Study

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ABSTRACT: This study provides managerial insight to pursue Collaborative Planning Forecasting and Replenishment (CPFR) or Vendor Managed Inventory (VMI) strategy for both the retailer and manufacturer under different supply chain settings. Discrete event simulation is used to investigate the cost benefits of CPFR and VMI strategies over Traditional Supply Chain (TSC) in a variable demand environment. The conceptual model is a two-echelon production-inventory system with a manufacturer and a retailer. The results from this study suggest that when compared to TSC, both VMI and CPFR achieve cost benefits in inventory management for both the manufacturer and retailer. Under most supply chain settings, higher cost benefits are achieved in CPFR compared to VMI. Also, CPFR achieves higher cost benefits when demand variability is high, production capacity is low, backorder penalty cost is high and delivery lead time is long. However, when production capacity is high and delivery lead time is short, the cost benefits of CPFR and VMI are significantly lower.

Key Words: CPFR, VMI, Collaboration Strategy, Simulation Modeling, Inventory Management

Benefits Of Cpfr And Vmi Collaboration Strategies In A

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Benefits Of Cpfr And Vmi Collaboration Strategies In A:

Benefits of CPR and VMI Collaboration Strategies in a Variable Demand Environment Dattaraj

Kamalapurkar,2011 In recent years practitioners and academic researchers have emphasized that organizations need to collaborate with suppliers and customers to improve their competitive advantage The availability of cost efficient information technologies like EDI XML etc have made it possible to develop and implement many forms of collaboration strategies Among them Vendor Managed Inventory VMI and Collaborative Planning Forecasting and Replenishment CPFR are most popular which are considered for this study While many studies have identified the benefits of demand information sharing in supply chains however the benefits gained by implementing collaboration strategies like VMI and CPFR in a variable demand environment are not well established in the literature This study uses discrete event simulation Arena software to develop three different supply chain simulation models TSC VMI and CPFR These models are used to investigate cost benefits of CPFR and VMI over traditional Supply Chain TSC in a variable demand environment The conceptual model is a two echelon production inventory system with a manufacturer plant and warehouse and a retailer Periodic review order up to inventory policy is used to determine order quantity for retailer and production quantity for manufacturer during each period Manufacturer has capacity constraints and any demand not met during the period is backordered Similarly retailer fulfills their demand from available inventory and any demand not met is backordered Demand variability production capacity backorder penalty cost delivery lead time and supply chain strategy are used as the control variables Manufacturer cost and retailer cost are used as the performance measures The outputs from the three simulation models are analyzed using ANOVA and the Pairwise Comparisons method The results from this study confirm that when compared to TSC both VMI and CPFR achieve cost reduction for both the manufacturer and the retailer Also higher cost reduction is achieved in CPFR collaboration strategy compared to VMI for both the manufacturer and the retailer In addition for both the manufacturer and the retailer higher cost reductions are achieved in the CPFR strategy when demand variability is high production capacity is low backorder penalty cost is high and delivery lead time is high

Multi-Stakeholder Collaboration for Sustainable Supply Chain Frichi, Youness,Jawab, Fouad,2025-05-16 The future of supply chains points to strategic operations that are human centered and sustainable Sustainable supply chains play a crucial role in reducing waste and emissions while increasing energy efficiency Using new technologies including artificial intelligence AI big data and Internet of Things IoT supply chain security and logistics increase privacy accuracy and efficiency Furthermore multi stakeholder collaboration in supply chains may improve performance in businesses and foster a sustainable organizational culture Multi Stakeholder Collaboration for Sustainable Supply Chain promotes radical innovation and model development to measure the impact of human collaboration and sustainable development solutions Sustainable solutions and alternatives to meet challenges faced by supply chains are examined analyzed and discussed Covering topics such as vendor managed inventory conflicting interests and multi criteria

decision analysis this book is an excellent resource for business leaders executives manufacturers engineers researchers academicians and more *Optimal Control and Optimization of Stochastic Supply Chain Systems* Dong-Ping Song, 2012-11-29 *Optimal Control and Optimization of Stochastic Supply Chain Systems* examines its subject the context of the presence of a variety of uncertainties Numerous examples with intuitive illustrations and tables are provided to demonstrate the structural characteristics of the optimal control policies in various stochastic supply chains and to show how to make use of these characteristics to construct easy to operate sub optimal policies In Part I a general introduction to stochastic supply chain systems is provided Analytical models for various stochastic supply chain systems are formulated and analysed in Part II In Part III the structural knowledge of the optimal control policies obtained in Part II is utilized to construct easy to operate sub optimal control policies for various stochastic supply chain systems accordingly Finally Part IV discusses the optimisation of threshold type control policies and their robustness A key feature of the book is its tying together of the complex analytical models produced by the requirements of operational practice and the simple solutions needed for implementation The analytical models and theoretical analysis propounded in this monograph will be of benefit to academic researchers and graduate students looking at logistics and supply chain management from standpoints in operations research or industrial manufacturing or control engineering The practical tools and solutions and the qualitative insights into the ideas underlying functional supply chain systems will be of similar use to readers from more industrially based backgrounds *Intelligent Systems in Operations: Methods, Models and Applications in the Supply Chain* Nag, Barin, 2010-03-31 This book provides knowledge and insights on present and future AI applications in Operations Management presenting tools and decisions in terms of theoretical and empirical models methods and proposed applications Provided by publisher E-Collaboration: Concepts, Methodologies, Tools, and Applications Kock, Ned, 2009-05-31 This set addresses a range of e collaboration topics through advanced research chapters authored by an international partnership of field experts Provided by publisher **Collaborative Customer Relationship Management** Alexander H. Kracklauer, D. Quinn Mills, Dirk Seifert, 2012-11-07 Driven by rapidly changing business environments and increasingly demanding consumers many organizations are searching for new ways to achieve and retain a competitive advantage via customer intimacy and CRM This book presents a new strategic framework that has been tested successfully with various global companies New management concepts such as Collaborative Forecasting and Replenishment CRM Category Management and Mass Customization are integrated into one holistic approach Experts from companies like McKinsey and Procter Gamble as well as authors from renowned academic institutions offer valuable insights on how to redesign organizations for the future Logistik Management Thomas S. Spengler, Stefan Voß, Herbert Kopfer, 2013-03-11 Globalisierung und Virtualisierung der Geschäftsbeziehungen vergrößern Bedeutung und Komplexität logistischer Herausforderungen Die Gestaltung und das Management von Logistiknetzwerken oder der Beziehungen zu Logistikdienstleistern werden so zu

wesentlichen Wettbewerbsfaktoren Dies wurde von Forschung und Praxis erkannt und führt zur Entwicklung und Diskussion von Strategien Methoden und Werkzeugen welche es ermöglichen sollen den gestiegenen Anforderungen gerecht zu werden Das Buch wie die entsprechende Tagung haben zum Ziel den internationalen Gedankenaustausch und die Diskussion zwischen Wissenschaft und Praxis über aktuelle Problemstellungen erzielte Lösungen und zukünftige Entwicklungen in der Logistik zu fördern

Supply Chain Strategies, Issues and Models Usha Ramanathan,Ramakrishnan

Ramanathan,2013-09-12 In the 21st century supply chain operations and relationships among supply chain partners have become highly challenging necessitating new approaches e.g the development of new models Supply Chain Strategies Issues and Models discusses supply chain issues and models with examples from actual industrial cases Expert authors with a wide spectrum of knowledge working in various areas of supply chain management from various geographical locations offer refreshing novel and insightful ideas and address possible solutions using established theories and models Supply Chain Strategies Issues and Models features studies that have used mathematical modeling statistical analyses and also descriptive qualitative studies The chapters cover many relevant themes related to supply chains and logistics including supply chain complexity information sharing quality six sigma electronic Kanbans inventory models scheduling purchasing and contracts To facilitate easy reading the chapters that deal with supply chain related issues are first followed by studies on inventory scheduling purchasing and logistics This book can be used as a useful resource of supply chain management by academics students and practitioners This book can serve as a helping tool in managerial decision making for investments in collaboration and information exchange to improve forecasts scheduling and inventory management and for supply chain managers to leverage product and process complexities into competitive advantage Some interesting mathematical models can appeal to students and researchers interested in modeling the impact of information sharing in supply chains

Strategic Information Systems: Concepts, Methodologies, Tools, and Applications Hunter, M. Gordon,2009-08-31 This 4 volume set provides a compendium of comprehensive advanced research articles written by an international collaboration of experts involved with the strategic use of information systems Provided by publisher Leveraging Knowledge for Innovation in Collaborative Networks Luis M. Camarinha-Matos,Iraklis Paraskakis,Hamideh Afsarmanesh,2009-09-21 Collaborative Networks A Tool for Promoting Co creation and Innovation The collaborative networks paradigm offers powerful socio organizational mechanisms supported by advanced information and communication technologies for promoting innovation This in turn leads to new products and services growth of better customer relationships establishing better project and process management and building higher performing consortia By putting diverse entities that bring different perspectives competencies practices and cultures to work together collaborative networks develop the right environment for the emergence of new ideas and more efficient yet practical solutions This aspect is particularly important for small and medium enterprises which typically lack critical mass and can greatly benefit from participation in co innovation networks

However larger organizations also benefit from the challenges and the diversity found in collaborative ecosystems In terms of research in addition to the trend identified in previous years toward a sounder consolidation of the theoretical foundation in this discipline there is now a direction of developments more focused on modeling and reasoning about new collaboration patterns and their contribution to value creation Soft issues including social capital cultural aspects ethics and value systems trust emotions behavior etc continue to deserve particular attention in terms of modeling and reasoning Exploitation of new application domains such as health care education and active aging for retired professionals also help identify new research challenges both in terms of modeling and ICT support development

Handbook of Strategic e-Business Management Francisco J. Martínez-López, 2013-11-19 This research handbook provides a comprehensive integrative and authoritative resource on the main strategic management issues for companies within the e business context It covers an extensive set of topics dealing with the major issues which articulate the e business framework from a business perspective The handbook is divided into the following e business related parts background evolved strategic framework for the management of companies key business processes areas and activities and finally emerging issues trends and opportunities with special attention to diverse Social Web related implications The articles are varied timely and present high quality research many of these unique contributions will be especially valued and influential for business scholars and professionals interested in e business Many of the contributors are outstanding business scholars who are or have been editors in chief of top ranked management and business journals or have made significant contributions to the development of their respective fields

Energy, Natural Resources and Environmental Economics Endre Bjørndal, Mette Bjørndal, Panos M. Pardalos, Mikael Rönqvist, 2010-09-14 This book consists of a collection of articles describing the emerging and integrated area of Energy Natural Resources and Environmental Economics A majority of the authors are researchers doing applied work in economics and management science and are based in the Nordic countries These countries have a long tradition of managing natural resources Many of the applications are therefore founded on such examples The book contents are based on a workshop that took place during May 15-16 2008 in Bergen Norway The aim of the workshop was to create a meeting place for researchers who are active in the area of Energy Natural Resource and Environmental Economics and at the same time celebrate Professor Kurt Jørnsen's 60th birthday The book is divided into four parts The first part considers petroleum and natural gas applications taking up topics ranging from the management of incomes and reserves to market modeling and value chain optimization The second and most extensive part studies applications from electricity markets including analyses of market prices risk management various optimization problems electricity market design and regulation The third part describes different applications in logistics and management of natural resources Finally the fourth part covers more general problems and methods arising within the area

The Management of Industrial Forest Plantations José G. Borges, Luis Diaz-Balteiro, Marc E. McDill, Luiz C.E. Rodriguez, 2014-09-01 The Management of Industrial Forest Plantations Theoretical

Foundations and Applications provides a synthesis of current knowledge about industrial forestry management planning processes. It covers components of the forest supply chain ranging from modelling techniques to management planning approaches and information and communication technology support. It may provide effective support to education research and outreach activities that focus on forest industrial plantations management. It may contribute further to support forest managers when developing industrial plantations management plans. The book includes the discussion of applications in 26 Management Planning in Actions boxes. These applications highlight the linkage between theory and practice and the contribution of models, methods and management planning approaches to the efficiency and the effectiveness of industrial plantations management planning.

Global Applications of Pervasive and Ubiquitous Computing Gao, Tao, 2012-12-31 As technology continues to play a vital role in our everyday lives, advancements in human computer interaction studies embrace ubiquitous computing as a tool for information processing to evolve into the human environment. *Global Applications of Pervasive and Ubiquitous Computing* provides the global applications and efforts in building and applying pervasive and ubiquitous computer technology. This book provides an essential collection of research on information technology for educators, researchers and practitioners aiming to advance the practice and understanding of pervasive and ubiquitous applications.

Supply Chain Collaboration Mei Cao, Qingyu Zhang, 2012-10-05 To survive and thrive in the competition, firms have strived to achieve greater supply chain collaboration to leverage the resources and knowledge of suppliers and customers. Internet based technologies, particularly interorganizational systems, further extend the firm's opportunities to strengthen their supply chain partnerships and share real time information to optimize their operations. *Supply Chain Collaboration: Roles of Interorganizational Systems, Trust and Collaborative Culture* explores the nature and characteristics, antecedents and consequences of supply chain collaboration from multiple theoretical perspectives. *Supply Chain Collaboration: Roles of Interorganizational Systems, Trust and Collaborative Culture* conceptualizes supply chain collaboration as seven interconnecting elements including information sharing, incentive alignment, goal congruence, decision synchronization, resource sharing as well as communication and joint knowledge creation. These seven components define the occurrence of collaborative efforts and allow us to explain supply chain collaboration more precisely. Collaborative advantages are also divided into five components to capture the joint competitive advantages and benefits among supply chain partners. The definitions and measures developed here examine some central issues surrounding supply chain development but this is also followed up with real life managerial practicalities. This balance of theory and practical application makes *Supply Chain Collaboration: Roles of Interorganizational Systems, Trust and Collaborative Culture* a strong resource for industry practitioners and researchers alike.

Intelligent Fashion Forecasting Systems: Models and Applications Tsan-Ming Choi, Chi-Leung Hui, Yong Yu, 2013-11-29 Forecasting is a crucial function for companies in the fashion industry but for many real life forecasting applications, the data patterns are notorious for being highly volatile.

and it is very difficult if not impossible to analytically learn about the underlying patterns As a result many traditional methods such as pure statistical models will fail to make a sound prediction Over the past decade advances in artificial intelligence and computing technologies have provided an alternative way of generating precise and accurate forecasting results for fashion businesses Despite being an important and timely topic there is currently an absence of a comprehensive reference source that provides up to date theoretical and applied research findings on the subject of intelligent fashion forecasting systems This three part handbook fulfills this need and covers materials ranging from introductory studies and technical reviews theoretical modeling research to intelligent fashion forecasting applications and analysis This book is suitable for academic researchers graduate students senior undergraduate students and practitioners who are interested in the latest research on fashion forecasting

Information Technologies, Methods, and Techniques of Supply Chain Management Wang, John, 2012-04-30 This book has compiled chapters from experts from around the world in the field of supply chain management and provides a vital compendium of the latest research case studies frameworks methodologies architectures and best practices within the field of supply chain management Provided by publisher **Digital Accounting** Ashutosh Deshmukh, 2006-01-01 This volume provides a foundation in digital accounting by covering such fundamental topics as accounting software XBRL eXtensible Business Reporting Language and EDI The effects of the Internet and ERP on accounting are classified and presented for each accounting cycle along with a comprehensive discussion of online controls

Production Management and Process Control Beata Mrugalska, 2023-07-19 Proceedings of the 14th International Conference on Applied Human Factors and Ergonomics AHFE 2023 July 20 24 2023 San Francisco USA **Supply Chain Management** Bharti, Shikha Singh, Anand Pandey, Amit Sachan, 2024-10-17 The reference text discusses fundamental principles planning sourcing demand forecasting and supply forecasting in the field of supply chain management It further highlights the important aspects of supply chain management such as resource planning inventory management quality tools and documentation in logistics It demonstrates the issues barriers emerging trends and technological advances in supply chain management This book Discusses the principles of resource planning and inventory management in supply chain management Covers aspects of competing strategies and networking management Presents case studies highlighting ongoing practices and real time issues in supply chain management Highlights the importance of demand and supply forecasting in the field of supply chain management Explains quality tools emerging trends challenges and barriers in supply chain management It is written primarily for senior undergraduate and graduate students and academic researchers in the fields of industrial engineering production engineering mechanical engineering management supply chain management and manufacturing engineering

This book delves into Benefits Of Cpfr And Vmi Collaboration Strategies In A. Benefits Of Cpfr And Vmi Collaboration Strategies In A is a crucial topic that needs to be grasped by everyone, ranging from students and scholars to the general public. This book will furnish comprehensive and in-depth insights into Benefits Of Cpfr And Vmi Collaboration Strategies In A, encompassing both the fundamentals and more intricate discussions.

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 6. In chapter 5, this book will draw a conclusion about Benefits Of Cpfr And Vmi Collaboration Strategies In A. The final chapter will summarize the key points that have been discussed throughout the book.
- This book is crafted in an easy-to-understand language and is complemented by engaging illustrations. This book is highly recommended for anyone seeking to gain a comprehensive understanding of Benefits Of Cpfr And Vmi Collaboration Strategies In A.

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