

Is Demand Chain Management the New Supply Chain Management? Will the Demand Channel Trump the Supply Channel?

Daniel P. Bumblauskas
University of Northern Iowa

Paul D. Bumblauskas
PFC Services, Inc.

Kishor Sapkota
University of Northern Iowa

In this article, a contemporary view of demand chain management (DCM) is provided along with an in-depth literature review that has tracked all of the relevant and key articles on the subject to date. While the concept of DCM is believed to have been introduced in the 1990's, there has not been much research on DCM relative to other areas such as supply chain management. The methodologies, industries, and cases study companies utilized in the literature are also documented. A unique field case from the home improvement industry is provided along with recommendations for future research in the DCM field.

INTRODUCTION

There is more and more media attention being focused on the discipline of supply chain management (SCM) and how important it is to our business and organizational operations. Four of U.S. News and World Report's top five job skills are supply chain and operations management related (U.S. News and World Report, 2009). The COO frequently becomes the CEO; one of the highest profile cases of this was the leadership transition from Steve Jobs to Tim Cook at Apple. Academics' bookshelves are heavily loaded with SCM textbooks which analyze the world from the manufacturers' perspective; produce goods in a factory then push products to distributors, wholesalers, retailers and end users. This requires much anticipation, i.e., accurate forecasting, and requires significant vision and research & development. Most operations and SCM research focuses on the supply side: raw material suppliers, manufacturers, distributors, wholesalers, and retailers who manufacture, move and sell products and services. Practitioners have written about the need to align the demand side of the supply chain (Anderson, Britt, & Favre, 2007) and games and simulations, such as the MIT Beer Game simulation (Sterman, 1992), have been developed to replicate the functions of the typical supply chain system. Much less time has been devoted to the customers and end users who should drive business decisions, i.e., the channel entities that really cause demand to occur. This appears to be somewhat short-sighted as this does not focus on all the components of both the supply and demand channels. *Customer Relationship Management (CRM)* is one area of marketing research that has grown rapidly over the years; however, operations and SCM

researchers and professionals at times neglect the importance of the end-user customer, leaving them as an after-thought. Those in the operations & SCM field who have acknowledged this have coined the terminology *Demand Chain (Channel) Management (DCM)* to reflect those academics and practitioners that integrate the end-user into their supply chain strategy. This research line has the potential to change the way we think about the customer relationship, including the supply chain, and certainly will influence the way that work in process and finished goods are developed, produced and delivered to customers (manufacturing and logistics). For example, here are just a few of a seemingly infinite number of business situations that can be dictated by the customer in what we refer to as a truly *demand-centric* firm (Bumblauskas, Rosol & Bumblauskas, 2015): (1) The customers interviews candidates for employment at the supplier's firm, (2) the customer influences decisions on supplier R&D and new product development projects, (3) the customer helps control supplier quality as changes to the process are partially initiated by customers.

In this article, we will present a comprehensive literature review and tracking of articles in the field of DCM and provide macro and micro level case studies for DCM, or *demand-centric*, approach. The article tracking methodology we utilized assessed the topics and methods used by scholars and researchers studying DCM. We have provided multiple business cases at a high-level in this article and in our detailed case study. We found the DCM methodology to be very beneficial with favorable business results for our partners.

RESEARCH MOTIVATION AND BACKGROUND

This research project began with database searches to locate any and all articles which define and frame what DCM is and provide data, examples, and cases supporting the DCM theory. There was found to be a great deal of redundancy in the articles located; in some cases, the articles do not have much support of what DCM really is i.e., the searches pulled articles that do not truly apply, or are very specific applications of, DCM. As expected, most of these articles are fairly recent publications with much of the work in this area only dating back a dozen years (circa 2002) with an outlier or two from 1990's. This seems to be a truly emerging field within the marketing, supply chain, and operations management disciplines. We also theorize that the popularity of the concept may have lost some momentum during the Global Financial Crisis or Great Recession in the United States as there were many publications in the early-2000's, a sudden inexplicable gap in literature for nearly 10 years, followed by publications over the last few years from 2013 to 2016. We theorize that the research drops off during periods of time in which companies face adversity in their business operations and tend to hyper-focus on the supply channel. When opportunities present themselves and companies can "choose" what they produce, typically better economic times, companies tend to focus on the demand-channel.

The origins of DCM appears to date back to around 1990 (Ploos Van Amstel, Farmer, Philips, & Henley, 1990), however, there were inconclusive findings to determine who can be credited as publishing the first article which specifically uses the terminology "demand chain management," i.e., who created or invented this terminology. We believe it evolved from a demand or customer centered approach to SCM. Christopher and Ryals (2014) wrote a contemporary piece on DCM, with a case study on Rolls Royce, but did not conduct a thorough literature review having not cited many of the key articles on the subject published over the past 20 to 30 years. The primary journal with articles published in the area of DCM is also one of the preeminent journals in the field, the *Journal of Operations Management*, JOM (Elsevier B.V., 2015).

LITERATURE REVIEW

This section contains a list of a dozen articles, most of which were JOM articles, which were compiled with a focus on DCM within the field of supply chain and operations management. The objective for the literature review (Levy & Ellis, 2006; Gardner & Martinko, 1996), was to determine how the '*Demand Chain Management*,' term was developed, what was occurring in the applicable

research at that time that led to its creation, what major challenges and issues had companies faced using DCM, how is DCM evolving over the time, and what methods firms have implemented in terms of DCM in practice. The vast majority of the articles were from the JOM special issue on the DCM topic; volume 20, issue 6 (2002). Due to the limited number of directly applicable articles, each key article has been reviewed.

Frohlich and Westbrook (2002), analyzed the relationship between demand and supply chain integration, and performance in both manufacturing and service contexts and also enhanced the knowledge base about the implementation of supply chain improvements. The editors of JOM (2002) presented their contribution towards developing methodologies for addressing today's DCM challenges using a number of illustrative case studies, such as six customer cases of Nokia networks, DCM in manufacturing, and DCM in service. Landeghem and Vanmaele (2002) present a framework which clarifies the roles of both supply chain planning & demand chain planning and discusses the impact of uncertainty in SCM & DCM planning. Williams, Maull and Ellis (2002) present a case where strategic capabilities should be owned within production and operator supply chains within the dynamic aerospace environment. The oldest article referenced in in the background and history section (Ploos Van Amstel et al., 1990) studies the question of managing and controlling the pipeline and the need for a balanced flow from input to output. Hines, Silvi and Bartolini (2002), focused on gaining a grasp of the applicability of the operations management practices within industry by utilizing fully cross-functional integrative empirical research. Rosenzweig, Aleda, and Dean (2003) investigated the ways that manufacturing-based competitive capabilities mediate the relationship between supply chain integration and business performance since the mediating role of manufacturing capabilities have not been explored. Childerhouse, Aitken, and Towill (2002) explain the evolution of a focused demand chain over an extended period of time and presents a structured framework for implementing focused demand chains in an organization. Heikkila (2002) present the challenges of modern manufacturing and fast growing industries which want to achieve good customer satisfaction with efficiency and contribute to effectiveness in SCM. De Treville, Shapiro, and Hameri, (2004) discuss the story of a Nordic pulp and paper producer that was experiencing difficulties in managing its supply chain. Per Hilletoft, Dag Ericsson, and Martin Christopher (2009) first presented a literature review of DCM addressing the theory that DCM is the replacement of SCM and can be defined as "the alignment of demand creation and demand fulfillment processes across functional, organizational and inter-organizational boundaries (p. 1181)." Seethamraju (2014) explore different Australian organizations and their attitude toward DCM. DCM is a relatively new term for many organizations worldwide and this approach has yet to be adopted by the researched Australian organizations.

THEORETICAL AND CONCEPTUAL DEMAND CHAIN MODEL DEVELOPMENT

Methodology, Results and Findings

A thorough review of articles for the purpose of categorizing topics and methods used was conducted and the comprehensive results are shown in Tables 1 and 2. Table 1 contains a log of the specific articles reviewed in this study and Table 2 summarizes the methods used by the authors in their studies. Analyzing the article in the tables yielded the finding that each article has unique topics of study. However, article log article number 14 (Frohlich and Westbrook, 2002) and article 21 (Chong and Zhou, 2014) both utilized similar types of studies. The majority of the articles utilized case studies to study DCM, followed by interviews and large scale surveys of the articles. Most were published by the *Journal of Operations Management* (JOM) and involve manufacturing and service industries. Approximately 50% of the articles are from Journal of Operations Management.

The article tracking sheet for the study of DCM represents 20 unique articles and contains the name of the article, authors, topics of studies, methods used to study the topics, and the type of industry in which the study is primarily focused. There is also one book which is the only textbook we located on the subject (Hoover, Eloranta, Holstrom, & Huttenen, 2002). We have created an article log (code book) for each article so that they can be tracked easily with code number. We reviewed each article to present the

background of the topics and methods used in the study. This sheet demonstrates the most widely used methods followed by other methods in the study of DCM and also exhibits the topics of study to foster and cultivate the conceptualization of DCM. Each article presents a unique topic of study. The total number of methods used by these articles is 20. While there was no method used by the majority of these articles, approximately 35% of the articles used case studies, 25% used interviews and 25% used large scale surveys to study various DCM related topics. The case study companies usually are from manufacturing and services industries. However, article log article item number 20 (Madhani, 2013) uses eight case companies to study the topics in the manufacturing and distribution industries and log article number 21 (Chong and Zhou, 2014) uses the healthcare industry to study the topics.

TABLE 1
ARTICLE LOG OF DCM LITERATURE

Article Number	Article Name	Authors	Journal	Case Co.	Industry
1	Demand chain management: a Swedish industrial case study	Per Hilletoft Dag Ericsson Martin Christopher	Industrial Management & Data Systems	Swedish Manufacturer	Mfg.
2	Demand chain management — The implementation	Ericsson	ORiON	Alfa	N/A
3	Demand chain management in the container shipping service industry	Venus Lun et. al.	Int. J. Production Economics	Not Applicable (N/A)	N/A
4	Effectiveness and efficiency: the role of demand chain management	David Walters	The International Journal of Logistics Management	N/A	N/A
5	The Supply Chain Becomes the Demand Chain	Christopher & Ryals	Journal of Business Logistics	Rolls Royce	Service, Mfg.
6	From supply to demand chain management: efficiency and customer satisfaction	Jussi Heikkilä	Journal of Operations Management	Nokia	service
7	Robust planning: a new paradigm for demand chain planning	Hendrik Ban Landeghem, Hendrik Vanmaele	Journal of Operations Management	N/A	N/A
8	Operations in today's demand chain management framework	Willem Selen, Fawzy Soliman	Journal of operations Management	N/A	N/A
9	Demand chain management: an integrative approach in automotive retailing	Peter Hines, Riccardo Silvi, Monica Bartolini	Journal of Operations Management	automotive retailer	Service

Article Number	Article Name	Authors	Journal	Case Co.	Industry
10	Analysis and design of focused demand chains	Paul Childerhouse, James Aitken, Denis R. Towill	Journal of Operations Management	UK lighting company	Mfg.
11	DCM theory: constraints and development from global aerospace supply webs	Tim Williams, Roger Maull, Bruce Ellis	Journal of Operations Management	Lockheed Martin and the Eurofighter Typhoon the Boeing Company and airbus industries military helicopters	Mfg. Mfg. Mfg.
12	Demand chain management in manufacturing and services: web-based integration, drivers and performance	Ravi Seethamraju	information of technology and management	Fertco- manufacturing and distribution of fertilizer Consuco- manfg and distribution of fast moving consumer goods Pharmco- manfg and distribution of pharmaceuticals Enggo- manfg and distribution of engg. products Retailco- retailer of groceries and others Minco- mining company Conscol- SCM consulting practice Consco2- ERP and supply chain consulting practice	Mfg. distribution Mfg. distribution Mfg. distribution Mfg. distribution Mfg. distribution Mfg. distribution

Article Number	Article Name	Authors	Journal	Case Co.	Industry
13	Reinventing the wheel? A critical view of demand-chain management	Juliana Bonomi Santos, Simona D'Antone	Industrial marketing management	N/A	N/A
14	Demand chain management in manufacturing and services: web-based integration, drivers and performance	Markham T. Frohlich, Roy Westbrook	Journal of operations Management	N/A	Mfg., Services
15	Demand Chain management- integrating marketing and supply chain management	Uta Juttner, Martin Christopher, Susan Baker	Industrial marketing management	N/A	Mfg., Services
16	From supply chain to demand chain: the role of lead time reduction in improving demand chain performance	Suzanne de Treville, Roy D. Shapiro, Ari-Pekka Hameri	Journal of Operations Management	N/A	N/A
17	The influence of an integration strategy on competitive capabilities and business performance: An exploratory study of consumer products manufacturers	Eve D. Rosenzweig, Aleda V.Roth, James W. Dean Jr.	Journal of operations Management		Mfg.
18	Enterprise systems and demand chain management	Ravi Seethamraju	information technology and management		
19	Managing the demand supply chain (book)	Willam E Hoover Jr., Eero Eloranta, Jan Holmstrom, Kati Huttunen			
20	Demand Chain Management Enhancing customer value proposition	Pankaj M. Madhani	The european business review	Zara	Service
21	Demand Chain Management: Relationship between external antecedents, web based integration and service innovation performance	Alain Yee-loong Chong, Li Zhou	INT.J.production Economics	N/a	Healthcare

**TABLE 2
ARTICLE TRACKING METHODOLOGY**

Method	Which Article Number (log)?	How many articles (qty.)?
Dyadic research exploring boundary-spanning practices	5	1
Large-scale survey	5	1
Case study and/or survey methods	5	1
Agent-based modeling	5	1
Case study and/or survey methods	5	1
Other Method?		
case study	1,2,6,7,9,10,11	7
secondary data	1	1
Interviews	1,6,9,11,12	5
Proposition development	3,6,16	3
path analysis	3	1
chi square test	3	1
regression model	3,17	2
sensitivity test	3	1
desk- based approach	4	1
quantitative analysis	7	1
Periodic order review (POR)	7	1
Economic order quantity (EOQ)	7	1
Echelon inventory POR (SCR)	7	1
Optimized echelon inventory POR(SCO)	7	1
Literature review	8,13,16,21	4
Hypothesis testing	8,14,17,21	4
large- scale survey	9,11,14,17,21	5
cluster analysis	9	1
analysis and design	10	1
qualitative field study(cross- sectional field study)	12	1
qualitative content analysis	13	1
Scheffe and ANOVA method	14	1
co-development work shop	15	1
focus group discussion	15	1

A FIELD ACTION RESEARCH CASE STUDY OF DEMAND CHAIN MANAGEMENT

We have now provided numerous examples of DCM in practice; this section details a consulting project in which the co-authors intentionally applied demand-based concepts to a client situation free of most supply chain/channel influences. This case helps demonstrate the timely power of the influence of the demand-based concepts on a business. The consulting client studied operates a building

materials/home center and is located in Michigan (USA). The business experiences seasonal influences from many factors, including the weather. We have provided consulting and facilitating services to this company periodically over the past ten years. We were approached by their General Manager for advice as the year had started with a sales decline of 0.9%, despite new traditional sales initiatives throughout the organization. Their gross profit was down 3.4%. He asked if there was a way to immediately improve sales and gross profit performance without substantial risk to the organization. It was determined that the best approach was to identify one or more outside sales associates that could increase the probability of an increase in sales and gross profit. We did not feel that the traditional sales and profit optimization techniques would be adequate for the company to achieve a further sales increase. It should be noted that our calendar year traditional sales and profit initiatives were successful with sales up by 4.6% and gross profit up 10.5% (2014 over 2013). It seemed like it would be difficult to perpetuate these positive outcomes with traditional supply chain initiatives.

Therefore, we suggested a demand-based approach- we call this a *demand-centric* approach. In this case, we chose a methodology that would allow us to intentionally choose *demand-centric* strategies and attempt to minimize disruption to the existing business. What is important to this case study is our demand-based approach and our intentional avoidance of traditional supply chain influences.

Demand-Centric Action Research Approach

As previously noted, in a demand-based environment the end-user or the customer is the key influence to the demand source. Often-times they are not one in the same. For example, in this industry it is quite common to have a customer that is a contractor that works with end users. We believe that the closer you get to the source of demand, the better you can evaluate the influences that would tend to cause improvement with sales and gross profit results. These are a byproduct and result of customer and end-user satisfaction- at least in the demand-based world.

When seeking new associates, traditional companies in the building material industry will advertise job postings (print and electronic), use search firms, ask for vendor referrals (supply channel) or will seek referrals from employees. We intentionally chose to avoid all of these options- they are costly and time-consuming. It can take an extended period of time to approach the market from a supply-based perspective and we needed results as soon as possible.

In order to develop the demand-based hiring techniques, we must first eliminate the supply-based techniques (as mentioned earlier). The demand-based approach required us to find a facilitator of demand-satisfaction- this would be our target for an addition to the company team. We chose a path that would not disrupt the existing customer base- so we expanded our target delivery area based on places where demand was likely to be found. We did this intuitively, but this can also be done quantitatively, using statistics such as the Buying Power Index (BPI) to identify possible sources of demand.

One complication that we encountered was the difficulty of finding the actual end-users. It was easier to identify contractors, remodelers and others that worked with the end users. Therefore, early in the project we surveyed the market to determine if there is was any common satisfier of demand in the targeted market area. One name kept surfacing and his name is John (individual's name has been changed for the purposes of anonymity). Keep in mind that at this point we had no knowledge of who John was or what caused the trusted advisor status that he seemed to enjoy with customers. He was currently employed at a very large competitor based in another contiguous market area.

Our next step was to identify the demand-based hiring techniques that would cause someone to want to join our team. Because this is a demand-based problem, these techniques could not be developed until we communicated with John (as John is closer to the source of demand than we are). After a couple of calls between the company and John it became clear that John is a family person that is driven by more than just work (i.e., work/life balance). Since time was of the essence, we suggested that the GM and his wife meet with John and his wife. We felt that they were co-decision makers and we needed buy-in from both; as such we suggested a dinner meeting between the four of them- the GM and his wife and John and his wife. We felt that we could not gain access to John without his spouse's approval- so she became an integral part of the demand-based recruiting process. We suggested that the GM and his wife eliminate as

many supply-chain influences as possible and just let John and his wife lead the conversation. This dinner meeting took place early in the project and less than two weeks after the demand-based initiative began. We believe the reason this happened so rapidly is the advantage of the demand-centric approach. Once demand-satisfaction has been identified, this creates a confidence level that does not exist with the supply-based approach. For example, when prior productivity is being relied-upon for a new hire, references must be obtained. With the demand-based approach the demand-channel has basically pre-validated prior success. Time is an important resource, therefore the time to hire and the time to impact an organization are both accelerated with the demand-centric approach. This is further discussed below.

As a follow-up to the meeting it was clear that money was far from the most significant issue. The issues were appreciation, flexibility with family, trust and a clear career path depending on performance outcomes. It was clear that the company he worked for would try to keep him and was able to increase compensation significantly if needed- maybe by as much as 50%. We could not compete with the dollars- we need to clearly understand and address the demand-based drivers that would cause John to want to make a change even with less initial income. Throughout that weekend we communicated with the GM and he communicated with John. Early the following week and as expected, his current employer countered with a substantial increase in compensation. After about three days of negotiation, John decided to join the company. He joined the company in late May 2015, after about a week off in between jobs.

Initial Observations and Case Results

First, we only interviewed one candidate. This saved a great deal of time, effort and money. All of our resources were focused on a validated driver of demand satisfaction. It is true that John could have chosen to stay where he was. But, the decision would have been swift and we could have moved forward with other demand-based initiatives. John would still have been on our relationship list and he might have still joined the company one day. There are both short-term and long-term objectives with demand-based initiatives, similar to what we observe with the supply channel.

We were very excited about the new addition to the team at the company. But there was lots of work ahead. John had huge potential- he was really a store within the store. But, we did not want the existing sales team to be negatively impacted by John. This became the main interface point and still is to the GM, similar to an *ambidextrous organization* (O'Reilly & Tushman, 2004). There was some pressure on logistics- vendors, which were not necessarily the same, and our fleet of trucks were feared to not be able to adequately satisfy our longer term objectives. This was somewhat expected since demand channel initiatives often-times require finding new vendors and reacting to demand as opposed to planning to work with the same vendors with the same continuing supply chain constraints.

It should be noted that we have found it can take ninety days to six months to hire a candidate for outside sales and the cost can be staggering. Hence, the positive results achieved can be delayed even if the effort is successful. We felt that John would bring us business immediately and there was a high likelihood that he could continue satisfying our new customer base. There is always uncertainty but we felt we did the best we could to minimize risk to the company.

After collecting a full year of data, less the first five weeks, we analyzed the impact on the organization. As we previously mentioned, business declined year-to-date through April 30, 2015. During the month of October 2015, the company began to experience seasonal declines in business which was anticipated to continue until spring 2016. We analyzed the full year from July 1, 2015 through June 30, 2016. From John, the company realized an increase of \$754,920 in sales or a very significant 14.2% of the company's total sales. All of this was incremental sales volume. Without John's impact, sales would have decreased 8.3% (a continuation of the downward trend). So, effectively John reversed the downward trend and caused an increase in sales of 5.9%.

Naturally we were excited about these results. But, did the company actually make any more profit as a result of John? We analyzed the total payroll cost increase (payroll plus employer taxes) and the total cost was \$75,854 for the same year analyzed above. John generated gross profit of \$144,081 (sales less cost of goods sold). So, there was a net flow-through of \$68,227 (\$144,081 less \$75,854). This was caused by just one employee.

Therefore, we have concluded that the company was favorably impacted by the demand-based approach in hiring very early in the tenure of the new employee with the organization. As a result, there was a reversal to the overall trend of the company with just one employee hired using a demand-centric approach.

DISCUSSION AND CONCLUSIONS

In this paper we have presented a literature review on DCM as well as an industry cases to show the theoretical underpinnings of the DCM concept. We are not suggesting that organizations should abandon their customer relationship management, quality function deployment, voice of the customer, net promoter score, etc. methods and metrics to capture customer wants and desires. What we are suggesting is that supply chain organizations need to become more demand based or demand-centric (Bumblauskas et al., 2015) in order to evolve into an organization which utilizes DCM. They must work closer with their end users and suppliers to do everything possible to fulfill their customers' needs to become more demand-focused in their strategic thought process and tactical operations. Having spent years working as researchers and with consulting clients, we see this as one of the largest opportunities in modern day organizations.

Future work and further validation of this will be accomplished by collecting data from industry partners. A survey instrument adapted from other, such as those used in continuous improvement (Bumblauskas & Meyer, 2015) could be used in the next phase of the project.

REFERENCES

- Anderson, D. L., Britt, F. F., & Favre, D. J. (2007). The 7 principles of supply chain management. *Supply Chain Management Review*, 11(3), 41-46.
- Bumblauskas, D., Rosol, S. & Bumblauskas, P. (2015). Managing Multiple Consulting Projects: A Multi-level Application of the Demand-Based Approach. *Proceedings of the Decision Sciences Institute (DSI) 2015 Annual Conference*. Seattle, WA. Available: <http://www.decisionsciences.org/Portals/16/Proceedings/AM-2015/files/p1041687.pdf>. Last accessed December 20, 2016.
- Bumblauskas, D., & Meyer, B. (2015). Continuous improvement project selection and execution. *Proceedings of the Production and Operations Management Society (POMS) 2015 Annual Conference*. Washington D.C. Available: <http://www.pomsmeetings.org/ConfPapers/060/060-0146.pdf>. Last accessed December 20, 2016.
- Childerhouse, P., Aitken, J., Towill, D.R. (2002). Analysis and design of focused demand chains. *Journal of Operations Management*, 20(6), 675-689.
- Christopher, M., & Ryals, L. J. (2014). The supply chain becomes the demand chain. *Journal of Business Logistics*, 35(1), 29-35.
- Chong, A. Y. L., & Zhou, L. (2014). Demand chain management: Relationships between external antecedents, web-based integration and service innovation performance. *International Journal of Production Economics*, 154, 48-58.
- De Treville, S., Shapiro, R.D., Hameri, A-P. (2004). From Supply chain to demand chain: the role of lead time reduction in improving demand chain performance. *Journal of Operations Management*, 21(6), 613-627
- Editors, JOM. (2002). Operations in today's demand chain management framework. *Journal of Operations Management*, 20(6), 667-673.
- Elsevier B.V. (2015). *Journal of Operations Management*. Available: <http://www.journals.elsevier.com/journal-of-operations-management/>
- Frohlich, M.T., Westbrook, R. (2002). Demand chain management in manufacturing services: web-based integration, drivers and performance. *Journal of Operations Management*, 20(6), 729-745.

- Gardner, W.L. and Martinko, M.J. (1996). Using the Myers-Briggs Type Indicator to study managers: A literature review and research agenda. *Journal of Management*, 22(1), 45-83.
- Heikkila, J. (2002). From supply to demand chain management: efficiency and customer satisfaction. *Journal of Operations Management*, 20(6), 747-767.
- Hilletoft, P., Ericsson, D., & Christopher, M. (2009). Demand chain management: a Swedish industrial case study. *Industrial Management & Data Systems*, 109(9), 1179-1196.
- Hines, P., Silvi, R., and Bartolini, M. (2002). Demand chain management: an integrative approach in automotive retailing. *Journal of Operations Management*, 20(6), 707-728.
- Hoover Jr, W. E., Eloranta, E., Holmström, J., & Huttunen, K. (2002). *Managing the demand-supply chain: Value innovations for customer satisfaction*. John Wiley & sons.
- Landeghem, H.V. and Vanmaele, H. (2002). Robust planning: a new paradigm for demand chain planning. *Journal of Operations Management*, 20(6), 769-783.
- Levy, Y. and Ellis, T. (2006). A Systems Approach to Conduct an Effective Literature Review in Support of Information Systems Research. *Informing Science Journal*, 9, 181-212.
- Madhani, P. M. (2013). Demand Chain Management: Enhancing Customer Value Proposition. *The European Business Review*, 50-54.
- O'Reilly, C. A., & Tushman, M. L. (2004). The ambidextrous organization. *Harvard Business Review*, 82(4), 74-83.
- Ploos Van Amstel, M.J., Farmer, D., Philips, N.V., Henley, H. (1990). Controlling the logistic pipeline. *International Journal of Logistic Management*, 1(1), 1990.
- Rosenzweig, E.D., Aleda V.R., and Dean, J.W., Jr. (2003). The influence of an integration strategy on competitive capabilities and business performance: An exploratory study of consumer products manufacturers. *Journal of Operations Management*, 21(4), 437-456.
- Santos, J.B., D'Antone, S. (2014). Reinventing the wheel? A critical view of Demand-chain management. *Industrial Marketing Management*, 43, 1012-1025.
- Seethamraju, R. (2014). Enterprise system and demand chain management: a cross-sectional field study. *Information of Technology and Management*, 15, 151-161.
- Sterman, J. D. (1992). Flight simulators for management education. *OR/MS Today*, 19(5), 40-44. Available: <http://web.mit.edu/jsterman/www/SDG/beer.pdf> or <http://web.mit.edu/jsterman/www/SDG/beergame.html>. Last accessed January 11, 2016.
- U.S. News and World Report. (2009). *Get the Top Five In-Demand Skills*.
- Williams, T., Maull, R., and Ellis, B. (2002). Demand chain management theory: constraints and development from global aerospace supply webs. *Journal of Operations Management*, 20(6), 691-706.

ACKNOWLEDGEMENTS

The authors would like to thank the following University of Northern Iowa MBA Alumni for their contributions to the development of this research work: Prashant Misra and Madiha Ahsan.

CONTACT INFORMATION

Dan P. Bumblauskas, Ph. D.
 Assistant Professor of Management, Department of Management College of Business Administration,
 University of Northern Iowa, 1227 West 27th Street, 262 Curris Business Building, Cedar Falls, IA
 50614-0125; PH (319) 273-6793; email: daniel.bumblauskas@uni.edu