

The Dynamic Capabilities View: Supply Chain and Operations Management Perspectives

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The dynamic capabilities view is frequently applied in strategic management as a framework for understanding competitive advantage. The dynamic capabilities view is less prevalent elsewhere, and there is a dearth of research on the extent and topical focus of the dynamic capabilities view in supply chain and operations management. We address this gap with a review and content analysis of articles published between 2000 and 2015 in two highly respected journals: *Journal of Operations Management* and *Management Science*. We identify fifteen dynamic capabilities view-focused papers and analyze the identified articles in terms of publication frequency, publication by journal, industry focus, and primary research method. We then identify and classify the topics analyzed in those papers through the lens of the dynamic capabilities view. Based on that analysis, we conclude that dynamic capabilities view-based research is gaining traction in supply chain and operations management, and we propose an agenda for future research.

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I. INTRODUCTION

A basic question that every organization must address is how to achieve and sustain competitive advantage. The importance of this question is amplified by globalization, shorter product life cycles, and continuously changing customer preferences. The key to survival in this dynamic business environment is to develop capabilities that differentiate the firm from its rivals in the eyes of its customers (Stalk et al., 1992).

Competition among firms is based on capabilities (Swink and Hegarty 1998) and has been described as, “capabilities based competition” (Stalk et al. 1992). This perspective is consistent with the resource-based view of the firm (RBV) developed by Wernerfelt (1984) and Barney (1991). The RBV suggests that resources and capabilities that are valuable, rare, inimitable and non-substitutable (VRIN) allow firms to achieve sustained competitive advantage. The RBV has been used by management scholars to

explain heterogeneity in firm performance. The manifest popularity of the RBV is evidenced by the Kraaijenbrink et al. (2010) statement that “the resource-based view has become one of the most influential and cited theories in the history of management theorizing.”

Despite widespread acceptance among scholars, the RBV is criticized for certain weaknesses (Kraaijenbrink et al. 2010). The essence of the RBV is that firms achieve rents when they are better than others at acquiring resources (Makadok 2001) and when they focus on using current firm-specific assets (Teece et al. 1997). The criticism is that this may be possible in a static but not in dynamic business environments. The competitive advantage enjoyed by the firm may change over time, and the RBV should recognize changes over time in the capabilities that form the basis of competitive advantage (Helfat and Peteraf 2003). Teece et al. (1997) extended the RBV by incorporating two aspects: dynamics and capabilities. Dynamics highlights the importance of the ability to reconfigure the competencies, and capabilities stress the importance of strategic management to align the organization with the external environment. Teece et al. (1997) defined dynamic capabilities as “the firm’s ability to integrate, build, and reconfigure internal and external competencies to address rapidly changing environments.” Since that time, numerous definitions of dynamic capabilities have emerged (See, e.g., Barreto 2010). Opinions differ as to how dynamic capabilities are formed and when they are beneficial, but there is a consensus among scholars that organizations must have dynamic capabilities in order to sustain competitive advantage.

The dynamic capabilities view (DCV) has potential applicability in many fields but is especially prevalent in the strategic management literature (see, e.g., Ambrosini

and Bowman 2009; Barreto 2010). The major focus of strategic management literature has been explaining how organizations create and sustain competitive advantage (Barney, 1991). Rather than emphasizing static resources, firms should develop dynamic capabilities to create and sustain competitive advantage (Teece 2007); and the concept of dynamic capabilities has been broadly developed in academic research (Wang and Ahmed 2007). The importance of the DCV is evident from the number of articles that have used the term “dynamic capabilities.”

For example, Vogel and Güttel (2013) observed that the number of publications based on dynamic capabilities has increased exponentially from 1994 to 2011. Those authors found that the number of articles in management journals from 1994 to 2008 was 560, and the number of such papers doubled from 2009 to 2011 (Vogel and Güttel 2013). In operations and supply chain management, researchers have addressed the question of “how operations strategy will lead to better performance for the organization” (Schroeder et al. 2002). Skinner’s (1969) seminal article linking management to corporate strategy emphasizes the importance of operations strategy and its linkage to corporate strategy. Operations strategy is also seen as a natural pathway to change the environment in order to improve performance (Corbett and Claridge 2002).

A firm’s ability to achieve competitive advantage depends on capabilities—because capabilities create resources that the organization can leverage to achieve superior performance (Schroeder et al. 2002). Moreover, the basis of competition among firms has moved to the capability level (Swink and Hegarty 1998) and many capabilities are rooted in operations (Coates and McDermott 2002).

The concept of capabilities in operations management literature has been

adopted from the field of management (Peng et al. 2008). Most operations and supply chain research uses the resource-based view (RBV) as the foundation of the capability perspective (See, e.g., Peng et al. 2008; Schroeder et al. 2002; Wu et al. 2010) rather than relying on the dynamic capabilities view. The relative scarcity of DCV-focused research in operations and supply chain management underpins the motivation for the current study. But research in this area has included studies that consider competitive response situations without specific reference to the DCV. Xu and Fang (2016) studied the signaling effects of a durable goods manufacturer's product line strategy and its interaction with a complementary industry. Cagle and Cannon (2014) investigated the effects of the relative capacity positions of firms on financial performance over time, and Shah et al. (2015) offers a genetic algorithm to dynamically optimize facility layouts based on forecast demand for each successive time period—which necessarily reflects the effect of competitors' actions on changing market conditions. In addition, operations management scholars have a longstanding tradition of adopting theories from other mature fields like sociology and economics (Amundson, 1998). This approach offers great promise with regard to a useful theoretical framework like the DCV that has been leveraged effectively in other fields.

With these considerations in mind, we believe it is appropriate to assess the impact of the DCV in operations and supply chain management literature. More specifically, we address the following research questions:

1. To what extent has the dynamic capabilities view been applied in supply chain and operations management research?
2. What topics and subject areas in supply chain and operations management have been

studied through the lens of the dynamic capabilities view?

This objective of this paper is to answer these research questions by analyzing papers published between 2000 and 2015 in two journals that are highly regarded in supply chain and operations management: *Journal of Operations Management* and *Management Science*. This study makes two contributions to supply chain and operations management literature after analyzing the previous literature on applications of the dynamic capabilities view. First, we summarize the current state of the dynamic capabilities view in supply chain and operations management literature. Secondly, and based on the foregoing analysis and gaps in the existing literature, we identify and describe topics that can usefully be investigated in future research.

The rest of this paper is organized as follows. Section 2 details the methodology used to identify articles drawing on the dynamic capabilities view in the subject journals. Section 3 presents a descriptive analysis of the articles identified in Section 2. Section 4 classifies and discusses the research disciplines and topics covered in the identified papers. Section 5 discusses future research directions, and Section 6 offers concluding remarks.

II. METHODOLOGY

There are a number of ways to examine previous work in order to draw inferences on the current state of the field and identify avenues for future research. Examples include literature review, bibliometric analysis, and meta-analysis. Earlier studies can be examined through quantitative analysis, qualitative methods, or both (Dobrzykowski et al. 2014).

Literature and content analysis have a long history of assessing and guiding research in supply chain and operations

management. A seminal article by Chase (1980) presented the results of a literature content analysis from leading journals to assess existing research practices and set out a topical framework and research agenda for the emerging field of operations management. Later content studies to compare results with Chase’s 1980 paper were offered to evaluate operations management research from 1982 to 1987 (Amoako-Gyampah and Meredith 1989) and to summarize research published in the 1990’s (Pannirselvam et al. 1999). Other researchers have applied literature analysis and content analysis more recently. Gunawardane (2015) studied the coverage of service operations management in three leading operations management journals from 2008 to 2013. Azevedo et al. (2016) used content analysis regarding 184 articles addressing supply chain process as the basis for an innovative reference model on core supply chain processes.

In this study, we deemed qualitative analysis appropriate to address our research questions. For this paper, we have only considered peer-reviewed journal articles in two top-tier journals. Conference proceedings or in-process papers were not considered. Our article selection methodology for this paper closely follows the guidelines as established in the Prisma 2009 flow diagram (Moher et al. 2009). The value addition of published articles depends on “what was done, what was found and clarity of reporting” (Moher et al. 2009) and the Prisma process fosters consistency and quality in the evaluation and reporting of published papers. Prisma guidelines include four phases for the evaluation process: Identification, Screening, Eligibility, and Inclusion, as shown in Figure 1.

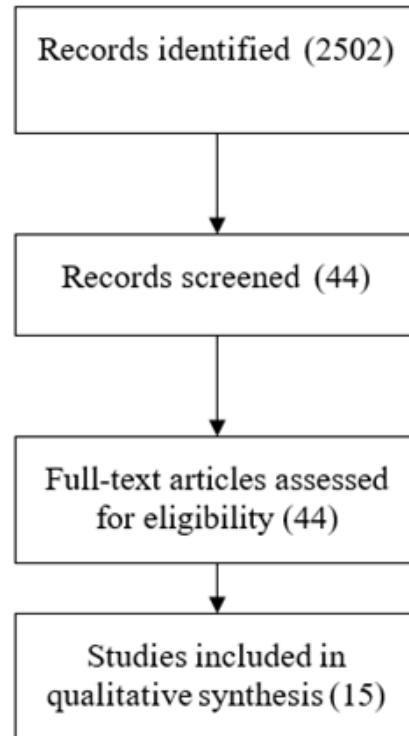


FIGURE 1. THE PRISMA (2009) SYSTEMATIC REVIEW PROCESS

The processes followed in each of the four phases of the evaluation process are described below.

2.1. Identification

The main aim of this study is to assess the use of the DCV in supply chain and operations management. As noted above, Journal of Operations Management and Management Science were selected as the source journals for the study; these are both recognized as elite journals in supply chain and operations management. These journals are frequently cited, are followed by researchers and faculty worldwide (Vokurka 1996), and are listed among the most influential academic journals—according to perceived influence of journals reported by senior editors (Vastag and Montabon 2002).

The time period identified for the

evaluation was from 2000 to 2015. That time period was selected because it takes at least one year to publish a new paper, and we regard sixteen years as sufficient to yield inferences regarding the life cycle of a theoretical framework.

We began the process of identifying articles to be used in the study by selecting the keywords to be used in our article search. In order to capture all articles potentially relevant to our research questions, we selected two phrases: dynamic capability and dynamic capabilities. Quotation marks were used to ensure that the search engine would consider each of these phrases as a single search term. Web of Science (WOS) was the database used to identify articles for this study. First, we used the terms “dynamic capability” and “dynamic capabilities” by using Boolean operator “OR” on the left side of the search field and “topic” was used on right side search field. The search was restricted to articles from the years 2000 through 2015.

The process yielded a total of 3,254 articles. Barreto (2010) searched on “dynamic capabilities” from 1997 to 2007 to illustrate the growing influence of DCV, and found a total of 1,543 articles that have used this term in the document text. This gives credence to the result of our identification process—although our search yielded more “hits.” We included a wider range of years, and used a second related phrase in our keyword search.

We then narrowed our search to recognize only published articles. These articles have gone through a rigorous peer review process (Newbert 2007), thus improving the quality control aspect of our study (David and Han, 2004). After imposing this restriction, the search identified 2,502 articles.

2.2. Screening

In alignment with the objective of this study, we further refined the result by limiting it to articles published in the Journal of Operations Management (JOM) and Management Science (MS). This process resulted in a total of 44 articles, with 26 articles in JOM and 18 articles in MS. To enhance the reliability of our search results, we searched the total number of published articles in the WOS database these two journals between the years 2000 and 2015 inclusive. A total of 2,923 articles were retrieved in this process, of which 701 were published in JOM and 2,222 were published in MS. We further cross-checked this WOS result with the publication of articles in each of the two journals, and confirmed that the WOS search result matches the actual publication total in the two journals. This process reduced the chance of excluding relevant articles due to use of a single screening methodology.

Barreto (2010) searched “dynamic capabilities” in titles and abstracts in five major management journals and found a total of 40 articles, which accounts for an average of 8 articles per journal. Our screening process of yielded a total of 44 articles in two leading Operations Management journals, providing reasonable comparability in terms of the number of articles in the journal set and tending to validate our screening approach.

2.3. Eligibility

The eligibility of the articles should be based on specific characteristics of the study (Moher et al. 2010) and we followed the following process to identify articles meeting the eligibility criteria.

1. Exclude articles in which “dynamic capabilities” was identified only in the reference section of the article.
2. Remove articles in which authors have used the phrase “dynamic capabilities”

without referencing a major contribution in the article.

3. Remove articles that did not use the DCV as the principal theoretical base of the article.

By following this three-step process, we observed that out of our 44 articles, 15 articles remained eligible for inclusion in this study. At first glance the number of articles evaluated might seem small—but when we compare the proportion of eligible articles to the initial sample size our result is similar to the finding of other studies that have followed a similar process. As an example, Gimenez and Tachizawa (2012) found that out of 117 screened articles only 41 were eligible for inclusion in their study.

2.4. Inclusion

Based on the results of the eligibility phase, the authors reviewed each of the 15 articles to confirm that they meet the eligibility criteria described above. All authors agreed that each of these 15 articles meets the eligibility criteria. Accordingly, each of these articles is included in the analysis. These articles are listed and summarized in Table 1.

III. DESCRIPTIVE ANALYSIS

The identified articles are classified below by year of publication, publication by journal, industry focus, and research method.

3.1. Year of Publication

A count of identified articles by year of publication is presented in Figure 2. This analysis shows that the first DCV-based paper in the two target journals was published in 2002. While recognizing the limitations imposed by the small number of observations

in the sample, and the intermittent publication pattern of DCV articles in the target journals, there is evidence of positive inertia. The frequency of publication increased, and instances of multiple publications within the same year became more frequent, after 2008.

3.2. Publication by Journal

Five articles (33%) were published in Management Science and 10 articles (67%) were published in the Journal of Operations Management. This suggests that between these two top-tier journals, the Journal of Operations Management would be the more receptive outlet for future DCV-focused researchers.

3.3. Industry Focus

Recognizing the possibility that the DCV may affect diverse industries in different ways, it is useful to examine the industry focus of DCV-related articles in the operations management literature. A primary distinction of interest is between manufacturing and service industries, with service industries characterized as generally involving higher levels of customer interaction (See, e.g., Swink et al. 2017; Jacobs et al. 2013). Recognizing that peer-reviewed articles in other disciplines have explicitly considered dynamic capabilities in the context of service industries (Agarwal and Selen 2009; Lee et al. 2011; Chen et al. 2015; Lee et al. 2015; Raman and Bharadwaj 2017), we found it interesting to examine the relative emphasis on manufacturing vs. service industries in the DCV articles from the two leading Operations Management journals.

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ID #	Author(s)	Year	Journal	Article Title
1	King and Tucci	2002	Management Science	Incumbent entry into new market niches: The role of experience and managerial choice in the creation of dynamic capabilities
2	Karim	2009	Management Science	Business unit reorganization and innovation in new product markets
3	Franco, Sarkar, Agarwal, and Echambadi	2009	Management Science	Swift and smart: The moderating effects of technological capabilities on the market pioneering–firm survival relationship
4	Mitchell and Skrzypacz	2015	Management Science	A theory of market pioneers, dynamic capabilities and industry evolution
5	Chen, Paulraj, and Lado	2004	Journal of Operations Management	The role of quality in e-procurement performance: An empirical analysis
6	Vaidyanathan and Devaraj	2008	Journal of Operations Management	The role of quality in e-procurement performance: An empirical analysis
7	Anand, Ward, Tatikonda, and Schilling	2009	Journal of Operations Management	Dynamic capabilities through continuous improvement infrastructure
8	Sarkis, Gozalez-Torre, and Adenso-Diaz	2010	Journal of Operations Management	Stakeholder pressure and the adoption of environmental practices: The mediating effect of training
9	Kristal, Huang, and Roth	2010	Journal of Operations Management	The effect of an ambidextrous supply chain strategy on combinative competitive capabilities and business performance
10	Balasubramanian	2011	Management Science	New Plant Venture Performance Differences Among Incumbent, Diversifying, and Entrepreneurial Firms: The Impact of Industry Learning Intensity
11	Su, Linderman, Schroeder, and Van de Ven	2014	Journal of Operations Management	A comparative case study of sustaining quality as a competitive advantage
12	Kortmann, Gelhard, Zimmermann, and Piller	2014	Journal of Operations Management	Linking strategic flexibility and operational efficiency: The mediating role of ambidextrous operational capabilities
13	Vanpoucke, Vereecke, and Wetzels	2014	Journal of Operations Management	Developing supplier integration capabilities for sustainable competitive advantage: A dynamic capabilities approach
14	Gligor, Esmark, and Holcomb	2015	Journal of Operations Management	Performance outcomes of supply chain agility: When should you be agile?
15	Tenhiälä and Helkiö	2015	Journal of Operations Management	Performance effects of using an ERP system for manufacturing planning and control under dynamic market requirements

TABLE 1. DCV ARTICLES, 2000-2015

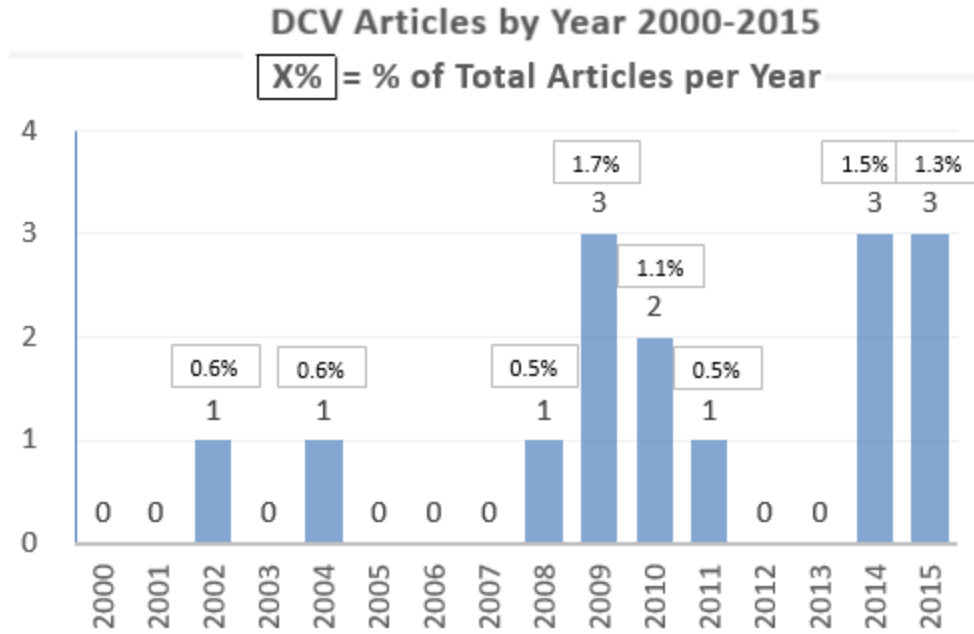


FIGURE 2. NUMBER OF DCV ARTICLES PUBLISHED BY YEAR, 2000-2015

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With that in mind, an analysis of the articles by industry classification was done to show the breakdown of articles by manufacturing, healthcare, other service industries, and diverse industries (covering manufacturing and services). The result of this analysis is shown in Figure 3. Most of the published articles (11 of the 15) focused on manufacturing. Health care was studied in two articles, and one article considered various industries. One of the identified papers did not apply any specific industrial setting; this was a theoretical paper. This analysis reveals a dearth of DCV-focused research in service industries, although service industries are an important growth area in many industrialized economies.

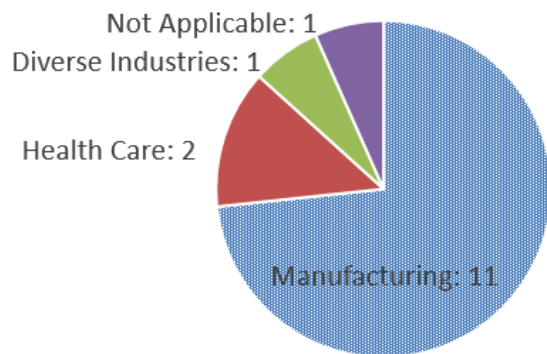


FIGURE 3. CLASSIFICATION OF ARTICLES BY INDUSTRY, 2000-2015

3.4. Research Method

The analysis based on research methodology shows that 14 papers applied

empirical methods using primary or secondary data, while only one paper was purely conceptual. This suggests that empirical research dealing with the DCV is strongly preferred over theoretical or conceptual papers in these two journals.

IV. RESEARCH DISCIPLINES AND ARTICLE TOPICS ANALYSIS

This section is devoted to the primary topics studied in the fifteen identified DCV papers. Each author reviewed and categorized each of the 15 articles based on research disciplines such as operations management, supply chain management, etc. This review process continued all initial discrepancies were resolved and we reached consensus on the match between the research discipline and the topic for each paper. This process led to the identification of three research disciplines for these topics.

The three research disciplines identified in the review process are Operations Management, Supply Chain Management, and Strategic Management. The identification of research disciplines was based on the definitions listed below.

Operations Management: The definition followed refers to “manufacturing and services processes that are used to transform the resources employed by a firm into the products desired by the customers” (Jacobs and Chase 2013).

Supply Chain Management: We used the definition “a set of three or more entities (organizations or individuals) directly involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer” (Mentzer et al., 2001).

Strategic Management: We adopted the definition put forth by Nag et al. (2007) of strategic management as the discipline that “deals with the major intended and emergent initiatives taken by general managers on

behalf of owners, involving utilization of resources, to enhance the performance of the firms in their external environment.”

A listing of the identified topics in each research discipline is presented in Table 2, and each of these topics is discussed below.

4.1. Operations Management

The identified topics related to operations management are continuous improvement initiatives, employee training, enterprise resource planning (ERP) systems, learning by experience and quality management. Each of these topics is discussed below.

4.1.1. Continuous Improvement Initiatives

To survive in the constantly changing business environment, organizations need to constantly improve their processes (Anand et al. 2009). But the management of continuous improvement (CI) initiatives is very challenging because CI requires certain necessary infrastructure to support it (Anand et al., 2009). In this article, the authors propose three components of CI infrastructure that will support the CI capability of the organization: purpose, process, and people. First, the purpose element is composed of organizational direction and communication devoted to the realization of CI goals. Second, the process component includes the culture of constant change, parallel participation structure, standardized improvement processes, and methods. Finally, CI requires sufficient training of employees and necessary information technology support related to the “people” component of CI infrastructure. Anand et al. (2000) validated their CI

infrastructure framework along with its elements through five case studies.

4.1.2. Employee Training

From an environmental perspective, pressure from the stakeholders has forced companies to focus on reducing adverse environmental impacts by adopting environmentally responsible operating practices. Although the direct influence of stakeholder pressure on the adoption of environmental practices is well documented in the literature, the mechanism through which these pressures led to specific environmental practices is not studied in detail (Sarkis et al. 2010). Training of employees in environmental tools such as the design of experiments is a dynamic capability of the company through which stakeholder pressure influences the company’s environmentally oriented reverse logistics practices (Sarkis et al. 2010). Those authors posit that employee training is a dynamic capability that mediates the relationship between stakeholder pressure and environmental practices. The three environmental practices studied by these authors were eco-design, source reduction, and environmental management systems. Sarkis et al. (2010) studied the Spanish automotive industry, and their results provided evidence that training fully mediates the relationship between stakeholder pressure and environmental practices. These results suggest that investment in human capital, such as training, helps to explain differences in the implementation of environmental practices among firms.

ID #	Research Discipline	Topics	Authors	Journal
4.1	Operations Management	Continuous improvement initiatives	Anand et al. 2009	JOM
		Employee training	Sarkis et al. 2010	JOM
		Enterprise resource planning (ERP)	Tenhiälä and Helkiö 2015	JOM
		Quality management	Su et al. 2014	JOM
		Learning By Experience	Balasubramanian 2011	MS
4.2	Supply Chain Management	Supply chain capabilities	Chen et al. 2004	JOM
		Logistics fulfillment capability	Vaidyanathan and Devaraj 2008	JOM
		Ambidextrous supply chain strategy	Kristal et al. 2010	JOM
		Supply chain integration capability	Vanpoucke et al. 2014	JOM
		Supply chain agility	Gligor et al. 2015	JOM
4.3	Strategic Management	Firm experience in the market	King and Tucci 2002	MS
		Macro and micro dynamic capabilities	Franco et al. 2009	MS
		Business unit reorganization	Karim 2009	MS
		Strategic flexibility	Kortmann et al. 2014	JOM
		Technology availability in the market	Mitchell and Skrzypacz 2015	MS

TABLE 2. DCV ARTICLE TOPICS BY RESEARCH DISCIPLINE

4.1.3. Enterprise Resource Planning (ERP) Systems

In practitioner literature, there is a lack of consensus on the role of Enterprise Resource Planning systems (ERP) on the performance of the organization, especially in a turbulent environment (Tenhiälä and Helkiö 2015). Practitioners are in agreement regarding the sensing capability of ERP, but those authors criticized the inherent inflexibility of ERP systems (Tenhiälä and Helkiö 2015), proposing that ERP system use is a dynamic capability, and examined its impact on firm performance. Tenhiälä and Helkiö (2015) identify the beneficial and detrimental impact of ERP through the Rigid Flexibility perspective and the Organic Organization theoretical lens. Data were collected from 151 plants and the context of ERP use was manufacturing planning and control (MPC); the results of the study support the beneficial argument in favor of ERP. Those authors identified two boundary conditions to explain their findings: that ERP is a technical system, and that the

interdependent nature of MPC activities is consistent with bureaucratic systems and processes.

4.1.4. Learning by Experience

For start-up firms, determining how to create and sustain competitive advantage over established firms is a major challenge (Balasubramanian, 2011). A number of studies indicate that established firms outperform de novo entrants (Mitchell, 1991) because established firms have resources and competences that can be exploited to gain advantage over the new entrants (Carroll et al. 1996). Despite these benefits to the incumbent, established firms do not always outperform the new entrants when they enter a new market (Klepper, 2002). Klepper (2002) investigated the automobile industry, and found that firms became successful due to the experience of their founders; this prior experience leads to the development of capabilities with a longstanding and positive effect on the performance of the firm—but that experience does not explain or predict

the kind of capabilities that eventually emerge. Balasubramanian (2011) added to this research by exploring the relationship between the firm's prior experience and the capability that, in turn, will determine the performance of a new venture. Balasubramanian (2011) argued that ability to learn from prior experience, or learning by doing, is a dynamic capability that, in turn, is influenced by experience that precedes the new venture. This capability is a major determinant of differential performance among established firms, diversified entrants, and de novo entrants (Balasubramanian 2011). In the same paper it is also argued that the relationship among prior experience, learning by experience, and new venture performance is moderated by the industry environment. These relationships were tested with data from 47,915 new plant ventures in US manufacturing industries from 1973 to 1997 (Balasubramanian 2011). These results suggest that learning by experience is a key capability that can directly impact the ability of de novo firms to have competitive advantage over existing firms in new plant ventures. This indicates that incumbents and diversified firms achieve better productivity as compared to new entrepreneurial firms with regard to new plant ventures.

Moreover, the industry environment affects the relationship between learning by doing and performance for incumbents and diversified market entrants (Balasubramanian 2011). These findings have major implications for start-up firms, especially in industries where learning is important. These new firms have different learning curves than those of incumbent and diversified entrants. Therefore, de novo firms need capabilities that allow them to start with performance levels that exceed the industry average (Balasubramanian, 2011). These results highlight the importance of capabilities associated with learning by

experience. These capabilities facilitate the development of sustained competitive advantage for the firm (Helfat and Peteraf, 2003).

4.1.5. Quality Management

There is a plethora of research advocating the benefits of quality for the organization—but questions remain with regard to quality as a source of sustained competitive advantage. Su et al. (2014) emphasized the need for a theoretical base to shed light on the sustained competitive advantage in quality. Those authors conducted a comparative case analysis to develop a theoretical framework on sustaining the benefits from quality. The authors conducted six case studies in three manufacturing firms. This study uses the quality capability view instead of quality practices view to in order to increase the generalizability of the proposed model. In addition to dynamic capability view, the authors use quality management, organizational learning, high-reliability organization and Red Queen theoretical lenses to support their arguments. The results suggest that the organization needs three capabilities to form the basis of dynamic capability in quality, which can help the organization to sustain quality. The three identified capabilities are meta-learning, sensing weak signal, and resilience to quality disruptions. Meta-learning reflects an increase in the ability of an organization to learn both from external and internal environments. Sensing weak signal refers to advance identification of events that can impact the quality of products and/or processes. Resilience to quality disruptions refers to the ability of an organization to recover quickly from quality problems. Su et al. (2014) argue that organizations need all three of these capabilities to sustain an advantage in quality.

4.2. Supply Chain Management

The identified topics related to supply chain management are supply chain capabilities; logistics fulfillment capabilities; ambidextrous supply chain strategy; supply chain integration capability; and supply chain agility. These topics are discussed below.

4.2.1. Supply Chain Capabilities

Chen et al. (2004) investigated the role of strategic purchasing in developing supply chain capabilities and effect of these capabilities on the firm competitive advantage. They proposed that strategic purchasing is a resource that can enhance the supply chain capabilities of the firm, and identified three types of capabilities: communication, a limited number of suppliers, and long-term orientation, which are enhanced through strategic purchasing. Moreover, they argued that these capabilities will lead to higher customer responsiveness and that such customer responsiveness will enhance the financial performance of the firm. Chen et al. (2004) found a significant link between strategic purchasing, supply chain capabilities, and the performance of the firm.

4.2.2. Logistics Fulfillment Capability

Vaidyanathan and Devaraj (2008) studied the quality performance in e-purchasing contexts between buyer and supplier. They proposed that online information and ordering procedures of the supplier are two types of information flow resources which will influence the logistics fulfillment capabilities of the buying firm. The two types of capabilities investigated in this study were fulfilled order accuracy and fulfilled order timeliness. In addition, those authors studied the impact of these capabilities on the satisfaction of the buying

firm. They found that information flow process quality helps the buying firm to develop their logistics fulfillment capabilities. They also found that logistics fulfillment capabilities increase the performance of the buying firm. In addition, the result of this study also suggests that the fulfilled order timeliness capabilities have more positive impact on buyer satisfaction than fulfilled order accuracy. This reaffirms the notion that time is an important competitive dimension in today's business environment.

4.2.3. Ambidextrous Supply Chain Strategy

Kristal et al. (2010) investigated the strategic choice of the manufacturing business unit in the context of supply chain management, and its influence on the development of operational capabilities and business performance of the manufacturer. Those authors focused on ambidextrous supply chain strategy (ASC), or the simultaneous pursuit of exploitation and exploration. In addition, Kristal et al. (2010) studied how the ASC helps the manufacturer develop combinative capabilities (CC), i.e., simultaneously excelling on delivery, quality, flexibility, and cost. Moreover, those authors develop a mediation model to analyze the mediation effect of CC on ASC and business performance (in terms of market share and profit). Those authors found evidence that manufacturers do pursue ASC, and that ASC helps manufacturers develop CC. This, in turn, leads to better business performance. The Kristal et al. (2010) study finds evidence that there is value in external knowledge and that external knowledge facilitates the manufacturer's internal competencies and business performance.

4.2.4. Supply Chain Integration Capabilities

Inter-organizational practices such as supplier integration are recognized as key

resources that can provide a competitive advantage—but studies have shown both positive and negative effects of supplier integration on performance (Vanpoucke et al. 2014). These mixed findings can be attributed to lack of supplier integration capability (SIC), which facilitates learning from key suppliers, and subsequent alignment and adaption of the firm's supply chain to better fit its business practices (Vanpoucke et al. 2014). These authors identified sensing, seizing, and transforming as three complementary sub-capabilities of SIC. Sensing refers to identification and interpretation of information, whereas seizing refers to coordination and planning decisions with the key suppliers. Transformation refers to change in the firm's supply chain that contributes to the dynamic nature of SIC. Vanpoucke et al. (2014) found evidence of a positive influence of SIC on operational performance (cost efficiency and process flexibility) and financial performance (market share, return on investment and return on sales). In addition, those authors found that the relationship between SIC and operational performance (cost efficiency) is stronger in both high market and technology dynamics conditions. Moreover, the relationship between SIC and operational performance is weakened as the number of key suppliers increases—but not in the case of increasing internationalization of the supply base. This suggests that different types of supply chain complexity have differential impacts on the performance of the buying firm.

4.2.5. Supply Chain Agility

Lean techniques are typically associated with reducing waste, whereas agility is related to quick response in the literature. Gligor et al. (2015) questioned these arguments and proposed that supply chain agility enhances firm performance

through cost efficiency and customer effectiveness. In addition, those authors studied how this relationship changes under environmental uncertainty. The three dimensions of environmental uncertainty used in that study were munificence, dynamism, and complexity. Gligor et al. (2015) found evidence that cost efficiency and customer effectiveness mediate the relationship between supply chain agility and firm performance (return on assets). The other interesting finding of that study is that environmental uncertainty positively moderates the relationship between a firm's supply chain agility and operational efficiency (cost and customer effectiveness).

4.3. Strategic Management

The identified topics related to strategic management are firm experience in the market; macro and micro dynamic capabilities; business unit reorganization; strategic flexibility; and availability of technology to existing players. These topics are discussed in sequence below.

4.3.1. Firm Experience in the Market

King and Tucci (2002) explored how firms develop dynamic capabilities to compete in a technology-centric and turbulent environment. They studied the disk drive industry from 1976 to 1995 and analyzed the impact of industry experience of firms on entry and success in a new market. Two types of experience were considered in this study. The first type, static experience, is related to the firm's experience in serving the existing market in terms of production and sales. The second type, transformational experience, reflects the firm's earlier venture into a new market. Entry into the new market is used as a proxy for dynamic capability. King and Tucci (2002) found that both types of experience have an impact on new market

entry. Serving the existing market increases the likelihood of new market entry, but the benefit of this experience is enhanced if the firm has prior experience in entering new markets.

4.3.2. Macro and Micro Dynamic Capabilities

Franco et al. (2009) analyzed the first mover advantage (FMA) in the rigid disk drive industry from 1977 to 1997. Those researchers argued that first mover advantage should be studied by incorporating the macro level dynamic capabilities (market pioneer and market responder) and the micro level dynamic capabilities (technology) of the firm. At the macro level, they propose that market pioneer and market responder capabilities are positively related to firm survival and that this is affected by the level of the firm's technological capabilities. Franco et al. (2009) found that technology is a complementary capability that can help to explain first mover advantage. In other words, their results suggest that market pioneers perform poorly relative to the market responder at low levels of technological capability—but their survival rate increases at higher levels of technological capability. Firms that are first movers and have better technological capabilities tend to perform better (Franco et al. 2009).

4.3.3. Business Unit Reorganization

Karim (2009) investigated the value creation or value destruction from the reorganization of a business unit using the theoretical lens of dynamic capabilities—arguing that reorganization can occur at the resource, division, or activity level. That study considers reorganization at the business unit level and recognizes the influence of reorganization on the degree of innovation.

The empirical setting was the medical sector, which includes healthcare services. Karim (2009) studied 257 firms from 1975 to 1997 with business units in the medical sector including healthcare services, pharmaceuticals, and the medical device industry. The main aim of that study was to test whether reorganization has a U-shaped or inverted-U shaped relationship with the degree of innovation. The findings support a U-shaped relationship between business unit reorganization and innovation. This result suggests that a learning mechanism influences the relationship between business unit reorganization and innovation. Additionally, the Karim (2009) findings deal with a positive influence of reorganization on innovation only after eight events of reorganization in a time span of three to four years. This implies that organizations can benefit from reorganization only if there are significant learning opportunities from multiple events of this type.

4.3.4. Strategic Flexibility

Kortmann et al. (2014), based on earlier literature on flexibility and efficiency, investigated how these two capabilities can co-exist to provide a sustained competitive advantage. Those authors propose that strategic flexibility does not directly impact the performance of the firm, but firm's two ambidextrous operational capabilities (mass customization and innovative ambidexterity) mediate the relationship between strategic flexibility and operating efficiency. Study findings include a negative but non-significant relationship between flexibility and operating efficiency—suggesting a tradeoff between those two capabilities. These results serve as support for the argument that both mass customization and innovation ambidexterity fully mediate the relationship between strategic flexibility and operational efficiency. The Kortmann et al.

(2014) study indicates that an organization can balance the tradeoffs between flexibility and efficiency.

4.3.5. Technology Availability in the Market

Mitchell and Skrzypacz (2015) studied a model of industry evolution that is based on dynamic capabilities. They argue that dynamic capabilities increase innovation, especially in submarkets (both mature and immature markets). They modeled dynamic capabilities to show whether innovation originates from the existing players or from new market entrants. The availability of technology to the existing players, having the potential to support innovation, is used as a proxy for dynamic capabilities. The model offered by those authors indicates that the rate of innovation, for incumbents and for new entrants, is a function of dynamic capabilities—but they find that the impact may vary depending upon the benefits of dynamic capabilities, in terms of marginal cost or average cost, for the existing players. Mitchell and Skrzypacz (2015) also highlight the important role played by dynamic capabilities in the life cycle and long-run equilibrium of the industry.

V. FUTURE RESEARCH DIRECTIONS

Our review of the DCV in leading operations management journals shed light on different aspects of the DCV such as the antecedents of dynamic capability, type of dynamic capability, and outcomes of dynamic capability. Our review of fifteen articles in two leading journals, and the use of DCV in other fields such as strategic management, led us to identify high-potential future research areas with respect to the DCV in operations management. These are outlined below in terms of studies on the distinction between dynamic capabilities and

operational capabilities; longitudinal studies; and industry sector studies.

5.1. Distinction between dynamic capabilities and operational capabilities

DCV literature has featured efforts to distinguish between dynamic capabilities and operational capabilities. Helfat and Peteraf (2003) defined operational capabilities as normal activities done repeatedly, such as manufacturing an item, whereas dynamic capabilities influence operational capabilities. The line that distinguishes dynamic capabilities from operational capabilities is not sharply defined. For example, Gligor et al. (2015) define supply chain agility as a dynamic capability whereas Yang (2014) defined supply chain agility as operational and relational capability. Future research should be conducted to more clearly differentiate these two capability types. In addition, existing literature suggests that the impact of dynamic capabilities on performance is through operational capabilities (Helfat and Peteraf 2003). We found only one article (Kortmann et al. 2014) that studied this relationship and found support for it. Future studies should expand this line of research to further illuminate the interplay of changes in operational capabilities and dynamic capabilities.

5.2. Longitudinal studies

Most of the identified DCV studies are cross-sectional, providing a snapshot of the situation at a single point in time. Many authors recognize the cross-sectional perspective as a major study limitation without offering longitudinal extensions. Additional longitudinal studies could illuminate the development and evolution of dynamic capabilities at the firm level over time.

5.3. Industry sector studies

Economic development, especially in industrialized countries, has been more prevalent in the service sector than in manufacturing over the past several decades. The increasing importance of the service sector has been recognized by leading operations management journals (Roth 2003). Despite this, we did not find any article that explicitly considers the DCV in terms of its general applicability to the service sector over the range of years we studied. This gap offers an opportunity to investigate research questions such as:

- (i) Are dynamic capabilities, as they are identified in manufacturing industries, applicable in the service sector?
- (ii) Do dynamic capabilities in the service sector have performance impacts similar to those identified in the manufacturing sector?

VI. CONCLUSIONS

This study examines the use of the dynamic capability view in operations and supply chain management from 2000 to 2015. We began by considering the extent to which the DCV has gained traction in the field: yearly trend, publication by journal, number of authors per article, industry, and research method. We also classified the articles into three major subject areas: operations management, supply chain management, and strategic management, and then identified and discussed the topics considered in each of the three subject areas. Based on our analysis, we identified a research gap in the application of the DCV to service industries that can be addressed in future research. We hope this study sheds significant light on the current state of DCV-focused research in supply chain and operations management and provides the foundation for extending DCV research in this field.

REFERENCES

- Agarwal, R. and Selen, W., "Dynamic Capability Building in Service Value Networks for Achieving Service Innovation", *Decision Sciences*, 40(3), 2009, 431-475.
- Ambrosini, V. and Bowman, C., "What Are Dynamic Capabilities and Are They a Useful Construct in Strategic Management?", *International Journal of Management Reviews*, 11(1), 2009, 29–49.
- Amoako-Gyampah, K. and Meredith, J. R., "The Operations Management Research Agenda: An Update", *Journal of Operations Management*, 8(3), 1989, 250-262.
- Amundson, S. D., "Relationships Between Theory-Driven Empirical Research in Operations Management and Other Disciplines", *Journal of Operations Management*, 16(4), 1998, 341–359.
- Anand, G., Ward, P. T., Tatikonda, M. V., and Schilling, D. A., "Dynamic Capabilities Through Continuous Improvement Infrastructure", *Journal of Operations Management*, 27(6), 2009, 444–461.
- Azevedo, R. C., D'Amours, S., and Rönnqvist, M., "A New Reference Model for Core Supply Chain Processes", *Journal of Supply Chain and Operations Management*, 14, 2016, 1-22.
- Balasubramanian, N., "New Plant Venture Performance Differences Among Incumbent, Diversifying, and Entrepreneurial Firms: The Impact of Industry Learning Intensity", *Management Science*, 57(3), 2011, 549–565.
- Barney, J., "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, 17(1), 1991, 99–120.

- Barreto, I. I., “Dynamic Capabilities: A Review of Past Research and an Agenda for the Future”, *Journal of Management*, 36(1), 2010, 256–280.
- Cagle, C. J., and Cannon, A. R., “Capacity and Financial Performance: A Review and Assessment of the Empirical Literature”, *Journal of Supply Chain and Operations Management*, 14(2), 2014, 12-32.
- Carroll, G. R., Bigelow, L. S., Seidel, M. L., and Tsai, L. B., “The Fates of De Novo and De Alio Producers in the American Automobile Industry 1885-1981”, *Strategic Management Journal*, 17, 1996, 117–137.
- Chen, J.-S., Kerr, D., Tsang, S.-S., and Sung, Y. C., "Co-production of service innovations through dynamic capability enhancement", *Service Industries Journal*, 35(1/2), 2015, 96-114.
- Coates, T. T., and McDermott, C. M., An Exploratory Analysis of New Competencies: A Resource Based View Perspective”, *Journal of Operations Management*, 20(5), 2002, 435–450.
- Corbett, L. M., and Claridge, G. S., “Key Manufacturing Capability Elements and Business Performance”, *International Journal of Production Research*, 40(1), 2002, 109–131.
- Chase, R. B., “A Classification and Evaluation of Research in Operations Management”, *Journal of Operations Management*, 1(1), 1980, 9-14.
- Chen, I. J., Paulraj, A., and Lado, A. A., “Strategic Purchasing, Supply Management, and Firm Performance”, *Journal of Operations Management*, 22(5), 2004, 505–523.
- David, R. J., and Han, S. K., “A Systematic Assessment of the Empirical Support for Transaction Cost Economics”, *Strategic Management Journal*, 25(1), 2004, 39–58.
- Dobrzykowski, D., Saboori Deilami, V., Hong, P., and Kim, S. C., “A Structured Analysis of Operations and Supply Chain Management Research in Healthcare (1982-2011)”, *International Journal of Production Economics*, 147(B), 2014, 514–530.
- Franco, A. M., Sarkar, M., Agarwal, R., and Echambadi, R., “Swift and Smart: The Moderating Effects of Technological Capabilities on the Market Pioneering–Firm Survival Relationship”, *Management Science*, 55(11), 2009, 1842–1860.
- Gimenez, C., and Tachizawa, E. M., “Extending Sustainability to Suppliers: a Systematic Literature Review”, *Supply Chain Management: An International Journal*, 17(5), 2012, 531–543.
- Gligor, D. M., Esmark, C. L., and Holcomb, M. C., “Performance Outcomes of Supply Chain Agility: When Should You Be Agile?”, *Journal of Operations Management*, 33–34, 2015, 71–82.
- Gunawardane, G., “Service Operations Management Research in Operations Management Journals: An Update”, *Journal of Supply Chain and Operations Management*, 15(2), 2015, 1-6.
- Helfat, C. E., and Peteraf, M. A., “The Dynamic Resource-Based View: Capability Lifecycles”, *Strategic Management Journal*, 24(10), 2003, 997–1010.
- Jacobs, R., and Chase, R., *Operations and Supply Chain Management: The Core* (4th ed.), McGraw-Hill Higher Education, Columbus, OH, 2013.
- Karim, S., “Business Unit Reorganization and Innovation in New Product Markets”, *Management Science*, 55(7), 2009, 1237–1254.
- King, A. A., and Tucci, C. L., “Incumbent Entry into New Market Niches: The Role of Experience and Managerial Choice in the Creation of Dynamic

- Capabilities”, *Management Science*, 48(2), 2002, 171–186.
- Kortmann, S., Gelhard, C., Zimmermann, C., and Piller, F. T., “Linking Strategic Flexibility and Operational Efficiency: The Mediating Role of Ambidextrous Operational Capabilities”, *Journal of Operations Management*, 32(7–8), 2014, 475–490.
- Klepper, S., “The Capabilities of New Firms and the Evolution of the US Automobile Industry”, *Industrial and Corporate Change*, 11(4), 2002, 645–666.
- Kraaijenbrink, J., Spender, J.-C., and Groen, A. J., “The Resource-Based View: A Review and Assessment of Its Critiques”, *Journal of Management*, 36(1), 2010, 349–372.
- Kristal, M. M., Huang, X., and Roth, A. V., “The Effect of an Ambidextrous Supply Chain Strategy on Combinative Competitive Capabilities and Business Performance”, *Journal of Operations Management*, 28(5), 2010, 415–429.
- Lee, P.-Y., Chen, H.-H., and Shyr, Y.-H., “Driving Dynamic Knowledge Articulation and Dynamic Capabilities Development of Service Alliance Firms”, *Service Industries Journal*, 31(13), 2011, 2223–2242.
- Lee, P.-Y., Kung, C.-Y., and Li, C.-S. J., “Developing Dynamic Capabilities in Culturally Distant Service Multi-Units”, *Industrial Management & Data Systems*, 115(8), 2015, 1547–1562.
- Makadok, R., “Toward a Synthesis of the Resource Based and Dynamic Capability Views of Rent Creation”, *Strategic Management Journal*, 22(5), 2001, 387–401.
- Mentzer, J. T., Dewitt, W., Keebler, J. S., Min, S., Nix, N. W., Smith, C. D., and Zacharia, Z. G., “Defining Supply Chain Management”, *Journal of Business Logistics*, 22(2), 2001, 1–25.
- Mitchell, M., Skrzypacz, A., and Mitchell, M., “A Theory of Market Pioneers, Dynamic Capabilities, and Industry Evolution”, *Management Science*, 61(7), 2015, 1598–1614.
- Mitchell, W., “Dual Clocks: Entry Order Influences on Incumbent and Newcomer Market Share and Survival When Specialized Assets Retain their Value”, *Strategic Management Journal*, 12(2), 1991, 85–100.
- Moher D, Liberati A, Tetzlaff, J. A. D., “PRISMA 2009 Flow Diagram,” The PRISMA Statement (2009) <http://prisma-statement.org/documents/PRISMA%2009%20flow%20diagram.pdf> (accessed February 26, 2017).
- Moher, D., Liberati, A., Tetzlaff, J., and Altman, D. G., “Preferred Reporting Items for Systematic Reviews and Meta-Analyses: The PRISMA Statement”, *International Journal of Surgery*, 8(5), 2010, 336–341.
- Nag, R., Hambrick, D. C., and Chen, M.-J., “What is Strategic Management, Really? Inductive Derivation of a Consensus Definition of the Field”, *Strategic Management Journal*, 28(9), 2007, 935–955.
- Newbert, S. L., “Empirical Research on the Resource-Based View of the Firm: An Assessment and Suggestions for Future Research”, *Strategic Management Journal*, 28(2), 2007, 121–146.
- Pannirselvam, G. P., Ferguson, L. A., Ash, R. C., and Siferd, S. P., “Operations Management Research: An Update for the 1990s”, *Journal of Operations Management*, 18(1), 1999, 95–112.
- Peng, D. X., Schroeder, R. G., and Shah, R., “Linking Routines to Operations Capabilities: A New Perspective”, *Journal of Operations Management*, 26(6), 2008, 730–748.

- Raman, A. and Bharadwaj, S. S., "Dynamic Service Capabilities Enabling Agile Services", *Journal of Enterprise Information Management*, 30(1), 2017, 166-187.
- Roth, A. V., "Insights into Service Operations Management: A Research Agenda", *Production & Operations Management*, 12(2), 2003, 145–164.
- Sarkis, J., Gonzalez-Torre, P., and Adenso-Diaz, B., "Stakeholder Pressure and the Adoption of Environmental Practices: The Mediating Effect of Training", *Journal of Operations Management*, 28(2), 2010, 163–176.
- Schroeder, R. G., Bates, K. A., and Junntila, M. A., "A Resource-Based View of Manufacturing Strategy and the Relationship to Manufacturing Performance", *Strategic Management Journal*, 23(2), 2002, 105–117.
- Skinner, W., "Manufacturing - Missing Link in Corporate Strategy", *Harvard Business Review*, 47(3), 1969, 136–145.
- Shah, D. S., Krishnan, K. K., and Dhuttargaon, M. S., "Dynamic Facility Planning Under Production and Material Handling Capacity Constraints", *Journal of Supply Chain and Operations Management*, 15(1), 2015, 78-107.
- Stalk, G., Evans, P., and Shulman, L. E., "Competing on Capabilities: The New Rules of Corporate Strategy", *Harvard Business Review*, 70(2), 1992, 57–69.
- Su, H. C., Linderman, K., Schroeder, R. G., and Van De Ven, A. H., "A Comparative Case Study of Sustaining Quality as a Competitive Advantage", *Journal of Operations Management*, 32(7–8), 2014, 429–445.
- Swink, M., and Hegarty, W. H., "Core Manufacturing Capabilities and their Links to Product Differentiation", *International Journal of Operations & Production Management*, 18(4), 1998, 374–396.
- Swink, M., Melnyk, S. A., Hartley, J. L., and Cooper, M. B., *Managing Operations Across the Supply Chain*, (3rd ed.), New York, McGraw-Hill, 2017.
- Teece, D. D., Pisano, G., and Shuen, A., "Dynamic Capabilities and Strategic Management", *Strategic Management Journal*, 18(7), 1997, 509–533.
- Teece, D. J., "Performance and Microfoundations of (Sustainable) Enterprise Performance Explicating Dynamic Capabilities", *Strategic Management Journal*, 28(13), 2007, 1319–1350.
- Tenhilä, A., and Helkiö, P., "Performance Effects of Using an ERP System for Manufacturing Planning and Control Under Dynamic Market Requirements", *Journal of Operations Management*, 36, 2015, 147–164.
- Vaidyanathan, G., and Devaraj, S., "The Role of Quality in e-Procurement Performance: An Empirical Analysis", *Journal of Operations Management*, 26(3), 2008, 407–425.
- Vanpoucke, E., Vereecke, A., and Wetzels, M., "Developing Supplier Integration Capabilities for Sustainable Competitive Advantage: A Dynamic Capabilities Approach", *Journal of Operations Management*, 32(7–8), 2014, 446–461.
- Vastag, G., and Montabon, F., "Journal Characteristics, Rankings and Social Acculturation in Operations Management", *Omega*, 30(2), 2002, 109–126.
- Vogel, R., and Güttel, W. H., "The Dynamic Capability View in Strategic Management: A Bibliometric Review", *International Journal of Management Reviews*, 15(4), 2013, 426–446.
- Vokurka, R. J., "The Relative Importance of Journals Used in Operations Management Research: A Citation Analysis", *Journal of Operations Management*, 14(4), 1996, 345–355.

- Wang, C. L., and Ahmed, P. K., “Dynamic capabilities: A Review and Research Agenda”, *International Journal of Management Reviews*, 9(1), 2007, 31–51.
- Wernerfelt, B., “A Resource-Based View of the Firm”, *Strategic Management Journal*, 5(2), 1984, 171–180.
- Wu, S. J., Melnyk, S. A., and Flynn, B. B., “Operational Capabilities: The Secret Ingredient”, *Decision Sciences*, 41(4), 2010, 721–754.
- Xu, X., and Fang, F., “Product Line Strategy Under Complementary Effects”, *Journal of Supply Chain and Operations Management*, 14(1), 2016, 1-22.
- Yang, J., “Supply Chain Agility: Securing Performance for Chinese Manufacturers”, *International Journal of Production Economics*, 150, 2014, 104–113.