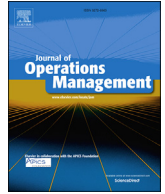




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## Forum

## Resource based theory in operations management research

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## ABSTRACT

Resource based theory (RBT) has become increasingly popular in operations management research. The development and current application of RBT to the study and understanding of operations management problems and phenomena are reviewed and articles in the recent six plus years across nine journals are evaluated. Based on this review and evaluation, we identify several issues in the overall research and highlight some exemplary research themes in the use of RBT in operations management. Our research suggests that further application of RBT can add richness in operations management research, and has the potential to produce multiple contributions for this field and adjacent fields.

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## 1. Introduction

In recent years there has been an increased emphasis on the use of theory in operations management (OM) research (Choi and Wacker, 2011; Ketchen and Hult, 2011). Because of their applicability and complementarity for the OM field, a number of theories from the organizational sciences have been utilized in the research (Ketchen and Hult, 2011). Among these are the resource-based theory (RBT), transaction cost theory, dynamic capabilities, knowledge-based view, systems theory, resource dependence theory, organizational learning, and social network theory, among others (Choi and Wacker, 2011; Hitt, 2011). Choi and Wacker (2011) suggest that authors have not only used these theories to help explain OM phenomena, they have also extended them, often integrating more than one theory to enrich the theoretical arguments used to address their research questions.

The broad applicability of RBT to multiple disciplines, and these extensions and complementary theoretical approaches, has led to increasing use of this theory in OM research. RBT suggests that firms are able to create and sustain competitive advantages through the collection and integration of rare, valuable, inimitable, and non-substitutable resources (Barney, 1991; Sirmon et al., 2011). This theory has become important for OM research due to its ability to

deconstruct the sources of a firm's competitive advantage both internally and across cooperative partnerships, such as in a supply chain. Further, possibly due to the differences in levels of analysis between strategic management (i.e., the firm) and operations (i.e., functions and supply chains), OM research has continued to develop RBT by focusing on the processes within and across firms that can collectively create, or destroy, competitive advantages.

Because of its appropriate application in this field and growing popularity among OM researchers, the purpose of this work is to review and evaluate the application of RBT to the study and understanding of OM problems and phenomena. Recent reviews have provided a current view of the OM field and research within it. For example, Craighead and Meredith (2008) concluded that research in OM has been dynamically evolving by engaging new research methods and foci. Additionally, using different methods, Pilkington and Meredith (2009) and Taylor and Taylor (2009) identified an overlapping set of primary themes (topics) in OM research. Among the most prominent of these themes/topics in OM research are: (1) supply chain management, (2) operations strategy, (3) performance management, and (4) product/service innovation. We focused on these themes because they were highlighted as significant (indeed, three of the four were the most prominent in the co-citation analysis conducted by Taylor and Taylor, 2009) and because of their special complementarity to RBT.

Supply chain management introduces a new focus on the RBT by analyzing the activities along the chain individually and collectively, and the extent to which those activities create resources for the focal firm. Operations strategy establishes a connection

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between inputs and outputs through operations, corporate strategy, and the synergies gained from integration/alignment of business and operation processes. Performance management and RBT both focus on the effective and efficient use of resources internally and cooperatively to help a firm outperform its rivals (gain a competitive advantage). Product/service innovation involves the introduction of new products or services to meet the customers' or market needs and is complementary to the other topics. All four topics are important in OM (Craighead and Meredith, 2008; Pilkington and Meredith, 2009; Taylor and Taylor, 2009) and offer a framework for the understanding of the development of RBT within OM research.

The primary objectives of this review are twofold: (1) to holistically understand the development of RBT and the OM field separately and collectively to date, with a focus on the most recent six plus years to identify the current state of such research, and (2) to offer suggestions for enhancing the integration of RBT and OM in future research. In doing so, this research contributes to both OM and RBT research going forward. Specifically, this work clarifies the use and integration of RBT across a variety of sub-disciplines or fields in OM. Further, by highlighting themes derived from the integration of RBT with OM research, we identify concerns in the general theoretical and empirical development that might hinder the value or contribution of future research. Lastly, we propose areas for future research with RBT across a variety of phenomena and theories used in OM.

The remainder of this review is structured as follows. First, we provide a brief history of RBT's development across disciplines, followed by an overview of previous research that explains the complementarity of RBT and OM concentrating across the four primary OM foci. Next, we describe our review methodology and report the themes and concerns identified from the most recent six plus years of research. Finally, we conclude with a discussion of future research opportunities in light of our findings.

## 2. Resource based theory development

RBT is a dominant paradigm in strategic management, and has become increasingly popular in adjacent and complementary fields such as OM and marketing, and management sub-disciplines such as human resource management and entrepreneurship. Although much of the current RBT research has been developed by strategic management scholars, it originated in the field of economics in the work of Edith Penrose (1959). Originally, it was not well accepted by the industrial organization (I/O) economists because RBT assumes that firms within an industry are heterogeneous based on differences in their resources. Whereas, the dominant thinking in I/O economics is that any heterogeneity across firms is only temporary as homogeneity is assumed to develop within an industry over time.

The field of strategic management assumes that firms strive to differentiate themselves from rivals to earn and sustain a competitive advantage. Therefore, it is not surprising that strategic management scholars identified and translated Penrose's original ideas to understand how firms create advantages over industry rivals with their strategies. Wernerfelt (1984) was one of the first to do so by linking competition among product market positions to competition among resource positions. A scholarly dialog between Barney (1986, 1991) and Dierickx and Cool (1989) further advanced our understanding of resource-based competitive advantages. Dierickx and Cool (1989) proposed a model of asset stocks and flows to explain the development and sustainability of competitive advantages. Specifically, they suggest that asset stocks are strategic to the extent that they are subject to time compression diseconomies, path dependencies, interconnectedness, social complexities,

and causal ambiguity which collectively (or sometimes individually) lead to competitive advantages. Dierickx and Cool (1989) also argue that a firm's sustainable competitive advantage is contingent on the firm's ability to continuously recombine its asset stocks and apply them to new market opportunities. Thus, a firm's most critical resources are accumulated rather than acquired in strategic factor markets. These ideas help to explain how similar bundles of resources between two firms can have different effects on performance, and also why similar investments by two different firms over the same period of time may not result in the same outcomes.

Barney (1991) built upon these ideas to suggest that firms need valuable and rare resources to gain a competitive advantage, but in order to sustain that advantage over time, the resources must also be difficult to imitate and non-substitutable by other firms' resources. This simple, logical, and easy to understand explanation of RBT has become the most popular model used in strategic management research; however, it has also been the subject of criticism (Priem and Butler, 2001). Some of those criticisms include the static nature of these arguments and the fact that it ignores the potential influence of the external environment. Further, there is some confusion in the research following Barney (1991) regarding the distinctions between resources and capabilities. For example, Leiblein (2011) suggested that many of the fundamental ideas and constructs of these perspectives are being used without clear distinction, creating an overuse of the concepts resulting in a lack of clarity, despite previous attempts to delineate these two concepts (e.g., Makadok, 2001).

Recent work extending Barney's (1991) RBT has helped to overcome some of these criticisms by drawing from and building on the original, but more nuanced ideas of seminal works. Specifically, the ideas surrounding the importance of managing resources controlled by a firm (Penrose, 1959), the necessity to consider managerial decisions (Amit and Schoemaker, 1993), and the dynamic nature of bundling, unbundling, and rebundling of resources (Black and Boal, 1994) have become more prominent in RBT alongside the ideas of non-substitutability and inimitability. Interestingly, parallel theoretical developments occurred across a variety of management subfields that sought to address such criticisms and advance RBT. For example, in strategic management research, Sirmon et al. (2007) argued that holding valuable, rare, inimitable, and non-substitutable resources was a necessary but insufficient condition for firms to achieve a competitive advantage. In short, they stated that firms must manage those resources effectively. Sirmon et al. (2007) suggested that managing or orchestrating the firm's resources included structuring the resource portfolio (acquiring, accumulating/developing, and divesting resources), bundling resources to create capabilities, and then leveraging those capabilities with the appropriate strategies (matched to the capabilities). In orchestrating the firm's resources, managers must select, develop, and bundle both tangible and intangible resources in the creation of capabilities. Alternatively in OM research, Grewal and Slotegraaf (2007) argued for the importance of managerial decisions on resource acquisition and deployment, while Jeffers et al. (2008) provide evidence that the value of a resource depends on integration with other resources in the bundle composing the firm. This logic is clearly parallel to resource management regarding both the importance of managerial actions and integration/synchronization across the firm, but the timing suggests this research was developed independently.

Regardless of the general terminology, intangible resources are more likely to produce a competitive advantage because their value is more difficult to imitate (e.g., ambiguous cause and effect) and their function(s) more difficult to substitute (Hitt et al., 2001; Hitt et al., 2006). Further, to build a competitive advantage, the resource portfolio, creation of capabilities, and designing and

implementing the strategies to leverage them must be synchronized (Sirmon and Hitt, 2009). When this occurs, the firm is more likely to provide a superior product to customers and thereby gain an advantage over rivals. Bridoux et al. (2011) continue to develop this logic of performance differences between firms despite similar resources by theoretically exploring how a firm's workers enable the realization of resource bundles for potential value creation.

Additional theoretical perspectives, especially dynamic capabilities and the knowledge based view, have provided complementary richness to RBT. The dynamic capabilities construct was not premised on RBT logic and yet, it extends our understanding of how resources can contribute to a competitive advantage over time. Essentially, this approach suggests that managers build their capability to change other capabilities in the firm as needed to achieve and maintain a competitive advantage (Teece et al., 1997). For example, Adner and Helfat (2003) explain how managers orchestrate their firm's assets to best rivals. Asset orchestration overlaps with the notions of resource orchestration posited by Sirmon and his colleagues. The complementarities between the two approaches are explained in Sirmon et al. (2011). Specifically, they suggest that resource orchestration focuses on the managerial actions that transform a resource portfolio into capabilities, and how those capabilities can be leveraged in the market. They also emphasize that the activities across all three processes must be synchronized to maximize the probability of achieving a competitive advantage. This integrative approach has led to further advancements in understanding how firms respond to resource deficits or weaknesses. RBT has largely focused on the importance of resource strengths. However, recent research suggests that managers have to address resource or capability weaknesses, as well as strengths, to achieve a competitive advantage (Sirmon et al., 2010). As such, executives must manage their resources to develop capabilities that allow them to overcome firm weaknesses.

Work in different contexts, and at different levels of analysis, has also contributed to the development of RBT. For example, by focusing on network configurations, Lavie (2006) suggested that firms can benefit from other firms' resources through interfirm linkages. However, other research has shown how advantages in one firm's supply chain can spillover to rivals that share suppliers (Mesquita et al., 2008). In a similar vein, work on trust and knowledge transfer in supply chains has been extensive, highlighting the benefits of such relationships (Dyer and Nobeoka, 2000; Dyer and Chu, 2003) and suggesting trust also can have a "dark" side (Villena et al., 2011). Specifically, a variety of research combining RBT with a relational perspective suggests that relational assets between firms are unique and valuable above the benefits obtained from basic resource sharing (e.g., Kotabe et al., 2003; Mesquita et al., 2008).

### 3. Complementarity of RBT and OM foci

Pilkington and Meredith (2009) suggested that the field of OM has begun to emphasize more strategic and macro issues (e.g., supply chains) and also focus more on theory development. Taylor and Taylor (2009) recommended drawing on theories from other fields that are especially useful in helping to understand phenomena in OM. In this regard, Pilkington and Meredith (2009) identify RBT as one with special complementarity to many of the important foci in OM. Thus, below we explore the complementarity of RBT and the four major OM foci identified from OM research.

#### 3.1. Supply chain management

Supply chain involves the upstream and downstream flows of products, services, finances, and information from the ultimate

supplier to the ultimate customer, and the outcomes of the supply chain, such as revenue growth, asset utilization, and cost. The goal of supply chain management is to realize the coordination of activities across the supply chain, create value for customers, and increase the profitability of every link in the chain.

The RBT provides a unique means of analyzing the supply chain to examine the activities along the supply chain individually and collectively (e.g. Williams et al., 2002). Each activity along the supply chain requires particular resources and capabilities to accomplish the task and contribute to a competitive advantage. However, it is important, and more challenging, to integrate the existing capabilities (bundled resources) across the supply chain, and leverage them effectively, in order to create a competitive advantage. In so doing, firms can realize greater cost reductions or profit improvements with the help of their supply chain partners. The capabilities provided by each partner along the supply chain can be integrated such that the supply chain contributes to the focal firm achieving more efficient and effective outcomes. Orchestrating capabilities across the chain of activities, including leveraging the collective capabilities, produces not only stronger and synergistic outcomes, but does so in a way to produce ambiguity of cause and effect. This ambiguity makes the collective capabilities and leveraging strategy difficult to imitate and produces greater value for the customer.

#### 3.2. Operations strategy

Operations strategy refers to the effective use of inputs and process capabilities to produce outputs that help to achieve business and corporate goals. These goals include innovation, customized products, product flexibility, product reliability, quality, response, delivery reliability, after sales service, and profit (Ahmed et al., 1996). The operations strategy concept establishes a connection between operations and corporate strategy. Scholars have acknowledged that "proper strategic positioning or aligning of operations capabilities can significantly impact competitive strength and business performance of an organization" (Anderson et al., 1989: 133). In fact, Hayes and Upton (1998) argue that operations not only serve as a buttress against rivals' attacks, but if embedded within the firm's employees and processes, can be inherently difficult to imitate.

The application of RBT to the operations strategy can add value to operations strategy research in at least two ways. First, the study of operations strategy considers operations as a strategic process involving the competitive positioning of operations' resources and capabilities. Thus, RBT, especially resource orchestration, complements operations strategy with a focus on acquiring and bundling the strategic resources to create capabilities that are leveraged to achieve a competitive advantage. Second, operations strategy requires a synergistic process of integrating and aligning business and operations (Shah and Ward, 2003). Similarly, RBT and specifically resource orchestration, emphasize the synchronization of the processes involved in acquiring, bundling, and leveraging. The acquisition and bundling of operations resources are leveraged with an operations strategy and thereby contribute to a competitive advantage (Pilkington and Meredith, 2009).

#### 3.3. Performance management

The ultimate goal of performance management is to satisfy the firm's customers by providing greater value, through enhanced efficiency and effectiveness, than its competitors (Liyana and Kumar, 2003). Effectiveness refers to the extent to which customer requirements are met, while efficiency is a measure of how economically the firm's resources are utilized in providing a

given level of product or service to customers. RBT plays important roles in understanding how both effectiveness and efficiency are achieved. The original work of Barney (1991) posits that a firm's resources include "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectiveness" (Barney, 1991: 101). Thus, the effective and efficient use of resources and derived capabilities internally and outside the firm is a necessary condition for achieving the desired performance relative to firms' competitors.

Fitzgerald et al. (1991) suggest that there are two basic types of performance management in organizations: one that focuses on results, such as competitiveness and financial performance, and the other that focuses on the determinants of the results, such as quality, flexibility, resource utilization, and innovation. RBT suggests that valuable, rare, inimitable, and non-substitutable resources are the source of sustainable competitive advantages. But, importantly, the firm must manage those resources in ways that create value for the customer. Stated in OM terms, the resources must be managed to create effectiveness, and do so in a highly efficient manner that can handle uncertainty in the environment (Irvani et al., 2005). Therefore, the RBT view of performance management helps us to understand how firms achieve effective outcomes with high efficiency; the RBT provides a useful view of how performance can be and is managed.

### 3.4. Product/service innovation

The topic of product/service innovation focuses on the new products or services introduced to meet the customers and/or market needs. It is one of the major topics in OM and is also closely related to other foci, such as operations strategy and performance management. From a RBT perspective, firms' special resources and specific capabilities are necessary to produce innovation. These are required in order to integrate the market demand into the process of developing product/service innovations. This integration involves effective communication and collaboration between product development and marketing units as described by Tatikonda and Montoya-Weiss (2001), and anticipating future customer needs to develop valuable new products with features desired by customers. The capabilities needed also help the firm to conceive of, and develop, a reliable and cost effective innovation system that supports new product/service development faster than competitors.

For example, technical knowledge and slack resources (financial and other forms of slack) are regarded as two types of potentially valuable resources which facilitate product/service innovations (Dewar and Dutton, 1986; Hage, 1980). Greater technical knowledge resources, for example, allow new technical ideas to be understood more easily and procedures for their transformation into an innovative product to be created and enacted (Dewar and Dutton, 1986). Such technical knowledge can also enable a firm to better develop new resources and capabilities to effectively leverage an emerging technology (Coates and McDermott, 2002). Similarly, slack resources allow an organization to purchase innovations, absorb failure, bear the costs of instituting innovations, and explore new ideas in advance of an actual need (Rosner, 1968).

Therefore, RBT has significant applications in OM, and it has been embedded in the OM literature over the past two decades.

## 4. RBT in recent OM research

To evaluate the use of RBT in recent OM research, we focused on nine of the major journals publishing scholarly research in the field. These are *Academy of Management Journal*, *Academy of Management Review*, *Decision Sciences*, *International Journal of Operations and*

*Production Management*, *Journal of Operations Management*, *Journal of Supply Chain Management*, *Management Science*, *Production and Operations Management*, and *Strategic Management Journal*. A previous review of theories in OM research suggested that RBT is closely tied to OM topics (Pilkington and Meredith, 2009); therefore, our interests are in understanding how the RBT has been applied in recent OM research. As such, we examined all articles published during the period of January 2007–May 2013 in the aforementioned journals. From this review, we identified 95 articles in which some version of the RBT was used (including highly complementary theories such as dynamic capabilities) in an OM context. The articles using the RBT or highly related/complementary theories represented slightly more than eight percent of all articles published by these journals during the 2007–2013 period examined.<sup>1</sup> So, approximately one of every 12 articles published in OM uses the RBT or a derivative for its theoretical underpinnings, highlighting the importance of understanding RBT and how it is used in the research. The articles identified in our review are listed and described in Appendix A.

Our finding regarding the use of RBT in 8.31% of OM articles aligns with trends identified by Pilkington and Meredith (2009) as illustrated in Fig. 1. These authors used citation analysis to investigate the evolution of the OM field between 1980 and 2006. RBT, as one of the 12 top knowledge groups identified by the authors, was ranked 12th during the first period of 1980–1989 with no articles using RBT in their sample. In the 1990s, RBT gradually gained popularity in OM with 1.7% of the articles in the field using RBT as the fundamental theory, increasing the rank of RBT from 12th to 10th in popularity of theories. From 2000 to 2006, RBT drew more research attention with 4.4% of the OM articles using RBT in their theoretical arguments, and its rank continued to increase to 6th among all the OM topics. Our research, which reviews OM studies from 2007, not only shows the growing use of RBT in the OM field (>8%), but also identifies some new developments as we explain in the next section.

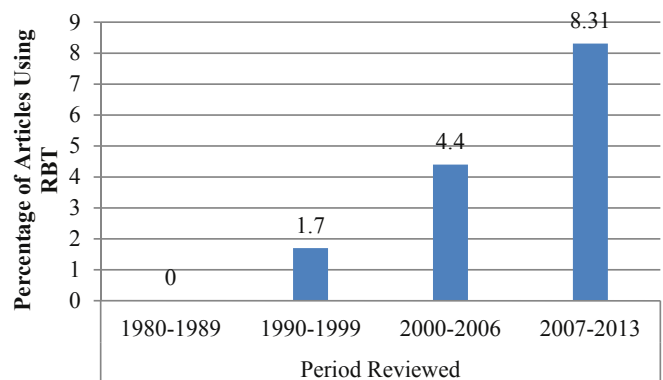


Fig. 1. Growth of RBT in operations management research.

<sup>1</sup> We used the total number of the articles published in *Decision Sciences*, *International Journal of Operations and Production Management*, *Journal of Operations Management*, *Journal of Supply Chain Management*, and *Production and Operations Management* as the denominator when we calculate the percentage of the use of RBT in OM articles. However, we only used the number of OM articles published in *Academy of Management Journal*, *Academy of Management Review*, *Management Science* and *Strategic Management Journal* for this calculation because these four journals publish work from many different areas of management research beyond operations. Operations management, then, only composes a portion of the work published in these journals. Thus, the inclusion of all the articles published in these four journals would not accurately reflect the popularity and value of RBT in the OM research.

Seventy of the articles identified in our review directly used the RBT. Of the other theoretical perspectives closely related to the RBT, the most commonly used was dynamic capabilities (in thirty-three of the articles). Logic consistent with resource management/resource orchestration was identified in nine of the articles. Approximately two-thirds of the articles were empirical and about one-third were conceptual. A trend identified in the articles reviewed is the integration of multiple theories. Approximately 77% of the articles used more than one theoretical perspective. As shown in Table 1, the most common theory integrated with the RBT was transactions cost theory (TCT) in nineteen articles. TCT was especially prevalent in the research on supply chain management. Additionally, dynamic capabilities and the knowledge based view were integrated with the RBT in fifteen and ten of the articles, respectively. This statistic is interesting because with the exception of a very few articles, dynamic capabilities is used independently of the RBT in strategic management research. The same is largely true in the application of the knowledge based view in strategic management research. Other theoretical perspectives integrated with the RBT in some of the OM research include resource advantage theory, social network theory, relational view (social capital), agency theory, institutional theory, and organizational learning, among others.

#### 4.1. Research foci

We use the four research foci (supply chain management, operations strategy, performance management, and product/service innovation) we identified earlier to categorize the articles reviewed. Table 2 presents a summary of the articles categorized by research foci. There were many articles relevant to more than one of the focal categories, thus we erred on the side of inclusion and categorized the article in each of the relevant research foci. These research foci identified in OM provide a means of organizing the research thereby highlighting the use of RBT in OM. In the following sections, we concisely describe the research using the RBT in the research foci (the literature provides a more elaborate view of them). These four research foci provide a better understanding of how RBT is applied in the OM field.

##### 4.1.1. Supply chain management

Forty-nine articles focus in some way on supply chain management. In this work, RBT is dominantly used to explain the supplier selection (e.g. Lewis et al., 2010; Mesquita et al., 2007; Squire et al., 2009), supplier–customer relationship (e.g. Johnson et al., 2007a), and outsourcing decisions (e.g. Dekkers, 2011; Gray et al., 2009; Kroes and Ghosh, 2010; Mclvor, 2009). RBT is also

**Table 1**  
Summary of commonly integrated theories with RBT.

| Theories integrated             | Number of articles |
|---------------------------------|--------------------|
| Transaction Cost Theory         | 19                 |
| Dynamic Capabilities            | 15                 |
| Knowledge Based View            | 10                 |
| Resource Advantage Theory       | 5                  |
| Relational View                 | 5                  |
| Institutional Theory            | 3                  |
| Network Theories                | 3                  |
| Organizational Learning         | 3                  |
| Agency Theory                   | 2                  |
| Strategic Choice Theory         | 2                  |
| Value Chain Theory              | 2                  |
| Other Theories (each used once) | 17                 |

Note: The total of theories integrated (86) is different than the number of articles reviewed (95) because some articles integrated more than one theory with RBT, while other papers did not integrate a separate theory with RBT.

**Table 2**  
Summary of articles by research foci.

| Research foci              | Number of articles |
|----------------------------|--------------------|
| Operations strategy        | 50                 |
| Supply Chain Management    | 49                 |
| Performance Management     | 42                 |
| Product/Service Innovation | 18                 |

Note: This table includes counts of all articles that were applicable to each category. Because many of the articles reviewed were applicable to more than one category, many of the articles are included more than once across the categories.

integrated with other theories, such as transaction cost theory (Dekkers, 2011), dynamic capabilities (Squire et al., 2009), knowledge based view (Bustinza et al., 2010), and agency theory (Kroes and Ghosh, 2010) to illustrate how to achieve a competitive advantage along the supply chain activities. Overall, RBT appears to be helpful in identifying and highlighting how the supply chain can be managed to contribute to a firm's competitive advantage. As Jones and Riley (1985: 19) point out, "Supply chain management deals with the total flow of materials from suppliers through end users ..." The management of resource flows from suppliers to the ultimate user is the primary task of supply chain management and the synchronization of the resources along the supply chain contributes to competitive advantages for firms. In addition, resource specificity and task complexity influence the governance mechanisms in the buyer–supplier relationships (Mesquita and Brush, 2008). Other theories such as resource dependence theory used in other OM research (e.g., Gulati and Sytch, 2007; Heide and John, 1988; Mesquita and Brush, 2008) may add additional value if integrated with RBT. We discuss the value of the potential integration of these two theories in the Discussion section.

##### 4.1.2. Operations strategy

There are 50 articles which integrated RBT and operations strategy. Understanding operations strategy from a RBT perspective is important because "it is more profitable to focus on developing, protecting, and leveraging a firm's unique operational resources and advantages in order to change the rules of competition" (Gagnon, 1999: 125). In line with this reasoning, a number of studies have shown that excellent resources, such as online information and process activities (Vaidyanathan and Devaraj, 2008), ERP (Stratman, 2007) and transactional and relational technology (Johnson et al., 2007b), contributes to a competitive advantage. More importantly, some general resources, such as alliance capability (Vivek et al., 2008), resource management (Hitt, 2011), or multicultural capabilities (Ang and Inkpen, 2008), are more likely to have VRIN characteristics and thus add value to competitive advantages. Applying RBT to operations strategy, the current literature suggests that focusing on developing, bundling, and leveraging a firm's unique operational resources and advantages help a firm to achieve competitive advantages. In addition, the portfolio of core competencies is linked to various operating decisions and the operations strategy is supported directly by key operational capabilities deeply anchored within business processes and organizational routines (Nelson and Winter, 1982; Stalk et al., 1992; Tranfield and Smith, 1998).

##### 4.1.3. Performance management

Performance management reflects how managerial activities influence the outcome of performance (Bititci et al., 2011). There are 42 articles which utilize RBT to interpret the performance management. The basic argument is that the valuable, rare, inimitable, and non-substitutable resources are the source of

performance improvement. Because of the various measures of performance, the research depicts performance management as the management of firm production efficiency (Mesquita et al., 2007), outsourcing success (Bustinza et al., 2010), supply chain performance (Kroes and Ghosh, 2010), information technology expenditures (Fung, 2008), firm level productivity (Broedner et al., 2009), financial performance (Reuter et al., 2010), and sustained competitive advantages (Jeffers et al., 2008). In general, a comprehensive performance management system has to accommodate a balanced view on overall performance involving not only outcomes, but also drivers of those outcomes. Additionally, it should provide some understanding about the causal relationships between them (Liyanaage and Kumar, 2003). RBT contributes to the understanding of the causal relationship in a performance management system for two reasons. First, resources and capabilities are important drivers of the overall performance. Understanding the relationship between resources and capabilities and performance helps firms to identify their strengths and weaknesses. Second, the performance management system also needs to be flexible in order to recognize and respond to the changes of operating inputs and resources over time and dynamically adapt the system accordingly.

#### 4.1.4. Product/service innovation

Innovation is an important topic in the OM field (Taylor and Taylor, 2009). The prevalence of product/service innovation research is reflected in our sample. There are 19 articles which focus on product/service innovation. The product/service innovation is represented by different forms such as labor-saving technology development (Lai et al., 2008; Fung, 2008), new product development (Johnson et al., 2007a; Lewis et al., 2010), process and organizational innovation (Camison and Lopez, 2010), and new service development (Froehle and Roth, 2007; Menor and Roth, 2008). In addition to the innovation outcomes, several articles also examined innovation-related resources and capabilities. For example, knowledge development capacity and intellectual capital are argued to be important resources (Craighead et al., 2009). Product/service innovation requires special resources and capabilities that differ from the requirement of standardized mass-produced products and services. It needs excellent technical experts, innovation capabilities, and technology competencies to handle the complex process of new product/service development, the integration of the design and construction, and the legal, environmental, and regulatory governance authorities (Gann and Salter, 2000).

## 4.2. Key issues identified

Our analysis of the articles identified several issues of importance for researchers using RBT in OM research.

### 4.2.1. Unclear differentiation between RBT and related theories

The differentiation among RBT and related theories was sometimes unclear in the articles examined from our sample. Although some authors distinguished among the theories, several articles appeared to use the resource based view, dynamic capabilities, and the knowledge based view interchangeably. As noted earlier, research on dynamic capabilities and the knowledge based view has largely ignored their potential relationship with the RBT. Yet, careful examination of the three suggests that all have similar bases and premises; so, examining the interrelationship among them could add value to the understanding and influence of each. Yet, the majority of research in OM did not consider their interrelationships. Therefore, the contribution to theory, especially to RBT, is unclear in these instances. However, understanding such interrelationships

represents an opportunity for researchers, in any relevant field including OM.

### 4.2.2. Distinction between resources and capabilities

The differentiation between resources and capabilities has been largely overlooked. The two constructs appear to be used interchangeably by many authors despite Sirmon et al. (2007) and other scholars noted earlier having differentiated between the two. Sirmon and his colleagues (2007) explained that resources (tangible and intangible) were bundled to create capabilities. For example, scientific equipment, technology and human capital are bundled to create a research and development capability. Some OM research differentiated resources from capabilities, especially those integrating the RBT and dynamic capabilities perspectives (e.g., Vaidyanathan and Devaraj, 2008); however, this was not the norm. OM scholars could increase the clarity and value of the contribution of their work by differentiating the resource and capability constructs in their research. The Sirmon et al. (2007) research may be helpful in differentiating the constructs in this research. A few of the studies cited Sirmon and colleagues work directly (e.g., Ellram et al., 2013; Priem and Swink, 2012) while others used theoretical logic that is consistent with resource orchestration (e.g., Craighead et al., 2009; Grewal and Slotegraaf, 2007; Oh et al., 2012). Resource orchestration might be particularly helpful for explaining various operational capabilities and the capabilities needed for effectively managing a firm's supply chain and the broader value chain (Hitt, 2011).

### 4.2.3. Applicability of RBT vs. RAT to supply chain research

The review of the RBT articles highlighted a potentially important debate. Five of the articles we reviewed used resource advantage theory (RAT), an approach based on resources, but with differences from the RBT (Golici and Smith, 2013; Greer and Theuri, 2012; Hunt and Davis, 2008; Hunt and Davis, 2012; Leuschner et al., 2013). As a brief summary of this debate, Ramsay (2001) argued that RBT suggested purchasing could not contribute to a competitive advantage, and in fact that the theory would lead one to conclude that it has negative effects on the firm's ability to gain a competitive advantage. Further, he argued that such a conclusion was erroneous; rather, purchasing could have a positive influence on competitive advantage. Hunt and Davis (2008) argued that supply chain management should be grounded in Hunt's (2000) RAT. Further, they compared and contrasted RAT and RBT. Priem and Swink (2012) also argued that the RAT was better suited to supply chain management for several reasons. First, they suggested that Hunt's theory is dynamic whereas the RBT is static. For example, RAT assumes that product markets are dynamic and heterogeneous and the theory emphasizes the importance of the consumer. Yet, Priem and Swink (2012) also suggested that RAT suffered from an ambiguous definition of resources similar to the RBT. As such, they recommended the use of dynamic capabilities in place of the resource construct. We believe that substituting dynamic capabilities for the resource construct creates other problems in that it provides a very narrow view and would reduce the value of the theory to OM researchers. Alternatively, we recommend that OM researchers use the resources and capabilities constructs as explained by Sirmon et al. (2007), as they provide clarification, greater accuracy, and enhanced applicability. Furthermore, the model they advanced is not static.

Barney (2012) countered the criticisms of the RBT noted above suggesting that they misinterpreted the theory and its implications for purchasing. Ramsay (2001) argued that RBT suggested any new purchasing rules or routines that created value would only do so temporarily because they would be quickly imitated by competitors. Whereas, Barney (2012) suggested that purchasing, and more

broadly supply chain management, can be a source of temporary or even sustained competitive advantage. He explained that firms knowing the value of a resource (unlikely known by others) can use this knowledge to develop a strategy for a product market that allows them to acquire factors at a price that produces economic profits (because the resource is then used to implement the strategy). In other words, the firm has private knowledge which allows it to make valuable purchasing decisions. Furthermore, Barney (2012) argued that purchasing and supply chain management capabilities developed within the firm are likely to be unique and difficult to imitate, partly because they are based on an exclusive set of intangible resources that cannot be easily identified by rivals. The bottom line question is whether or not resources purchased on the open market can be rare. Perhaps they can if others do not understand their value, or if the value only exists when the purchased resources are combined with the firm's complementary resources.

Since the publication of the Hunt and Davis (2008) article, a few other OM scholars have begun integrating RAT and RBT in supply chain research. Specifically, Greer and Theuri (2012) focused on the demand versus supply aspects of RAT and RBT in comparing the source of competitive advantage across supply chains. Similarly, in a meta-analysis Leuschner et al. (2013) used RAT, among multiple theories, to offer explanations of why supply chain integration can lead to competitive advantage for a firm. Finally, Golcic and Smith (2013) suggested that RAT and RBT are complements that together offer a more complete understanding of supply chain management with RBT focusing upstream while RAT focuses downstream towards customers.

The use and/or integration of RAT with RBT represents a new area of research and presently is concentrated in the field of supply chain management. However, the integration of ideas from both theories could be fruitful in future OM research across several research foci. Specifically, the upstream, supply/internal resource driven explanations of competitive advantage offered by RBT could be integrated with the downstream, customer/demand-side explanations of decisions that increase value. Furthermore, the careful use and integration of RBT/RAT concepts with other theories to explain a variety of phenomena could yield valuable insights for RBT and OM research going forward.

#### 4.2.4. Empirical measures and data analysis

A survey is the most common method used to collect data and test the theories in the OM studies we reviewed. There are advantages and disadvantages in RBT related studies in using a survey as the primary method of data collection. Surveys are able to accurately access information about tangible resources and probably are one of the best methods to capture the intangible resources and capabilities within a firm. However, the validity of the measures can be a serious concern when using survey data. For example, several of the conceptual papers focused on developing new theoretical constructs such as supply chain visibility (Barratt and Oke, 2007), capability embeddedness (Grewal and Slotegraaf, 2007), information visibility (Wang and Wei, 2007), and collaborative competence (Ang and Inkpen, 2008) to name a few. Yet, we only identified one article that developed a new theoretical construct and tested the scales used to measure the construct (Wu et al., 2010). While the discourse in research lends itself to use one study to theoretically develop a construct, and another to empirically test it, norms in publishing research have largely limited the number of published studies that theoretically develop and empirically test a new construct. Thus, while developing a new construct both theoretically and empirically in a single paper is not necessarily better than each of these steps developed in separate papers, combining the theoretical base and scale development into a single paper better ensures tests that carefully match the theory

thereby facilitating future research. Additionally, most of the studies were cross sectional, as is typical for much survey-based research, but yet, causal arguments and interpretations were frequently present.

Further, when the independent variables and dependent variables are collected in the same questionnaire, it has the potential for common method bias. While some of the papers we reviewed attempted to address this concern through the analyses (e.g., Vaidyanathan and Devaraj, 2008), the best way to avoid the common method bias is in the initial research design. Considering the benefits of surveys for RBT concepts, such as intangible resources and capabilities, collecting the independent variables using a survey and collecting the dependent variables using a second (different) data source, either archival or another survey administered separately, provides a means of avoiding potential common method bias in the data (e.g., Allred Fawcett et al., 2011; Craighead et al., 2009). Future OM research which collects the data in this way may significantly increase the data validity in their studies.

Of course, qualitative research can overcome some of these problems. It provides much richer information and can more easily be conducted over time, thus examining causal relationships. However, qualitative research commonly focuses on a small sample (e.g., one or a few case studies) that might be questioned for its representativeness and thus its generalizability. Often qualitative research can be quite useful in developing theoretical constructs and in constructing a theoretical model that can then be tested in larger sample studies using quantitative approaches and tools. For example, McIvor (2009) derived a framework from the analysis of three cases that integrated RBT and transaction cost theory. We identified seven studies in our sample that used case studies and two of them (Fawcett et al., 2011; Johnson et al., 2007b) combined the use of case studies and a survey which allowed them to gain the advantages of both methods.

#### 4.2.5. International/global perspective in research

A number of the empirical studies used international samples. Yet, few took advantage of these potentially rich samples to develop theoretical arguments and hypotheses that examined differences across countries. Because so many OM concerns are now influenced by global markets and global supply chains, more research on international concerns in OM could be valuable. As such, integration of international business (IB) theory with OM could be especially fruitful. Several respected IB scholars have argued that firms often decide to internationalize because of special resources they hold and wish to exploit, thereby suggesting the potential value of the RBT. In fact, the relationship between resources held by firms and their international strategy was demonstrated in the work of Hitt et al. (2006). They found that the internationalization of professional service firms was strongly and positively influenced by two primary resources, human capital and relational capital.

Despite the concerns identified, there were articles that represented exemplary research (in theory and methods). These are described in the next section.

#### 4.3. Exemplary research themes

In our review of the OM research, we identified a few articles that stood out as exceptional in their development of RBT, either theoretically or empirically. Offering clear conceptual distinctions of constructs and concepts, integrating multiple theoretical perspectives, and rigor and robustness in methods were common attributes across these exemplary articles that allowed for clear extensions of, and development in, RBT.

As mentioned previously as a key issue, some works offer excellent examples of developing clear distinctions between

central concepts and constructs in the context studied. For example, [Vaidyanathan and Devaraj \(2008\)](#) discuss the similarities and differences of resources and capabilities in both the literature and in their context of e-procurement as a foundation for building linkages between these concepts and satisfaction. Similarly, [Craighead et al. \(2009\)](#) theoretically differentiate capacity (as a capability) from resources (specifically intellectual capital) in order to link resources, actions, strategy types, and performance. The differences between resources and capabilities are not the only constructs that benefit from clear distinctions based on the context of the study. [Ellram et al. \(2013\)](#) offer a theoretical discussion of, and contrast between, strategic and non-strategic resources in supply-chain competition that allows them to identify when, and how, non-strategic resources become important determinants of firm performance.

While over half of the articles reviewed used more than one central theory, the exemplary works often developed clear distinctions of central concepts to successfully integrate RBT with other theories. For example, [Craighead et al. \(2009\)](#) developed their constructs by integrating arguments from RBT with the knowledge based view and strategic choice theory to show how the theories' complementarities can extend our knowledge of each. Further, there is a significant focus on integration in this study that is indicative of a trend towards resource orchestration logic. Other work brings a focus to the integration of popular and broad theories by narrowly, but robustly, examining one central concept common to multiple theories. For example, [Cannon et al. \(2008\)](#) focus on how uncertainty can drive decisions, both internally and externally, and how these decisions may be interdependent by integrating arguments from RBT, transaction cost theory, and resource dependence theory. While many works sought to extend RBT by integrating more novel, or at least less broadly used, theories, [Allred et al. \(2011\)](#) show that there is significant potential richness to be achieved by extending RBT through an integration with dynamic capabilities. These authors were able to extend RBT by clearly distinguishing and linking RBT and dynamic capabilities to develop the concept of a dynamic collaboration capability.

Methodological rigor is also a defining characteristic in exemplary articles across all domains of research; however, it can sometimes be challenging to evaluate the empirical quality of earlier work in tandem with more recent research as the state of the field must always be considered along with the constraints of each context. But, certain practices such as an emphasis on construct validation and the use of multiple methods and data sources have been, and remain, critical for the development of RBT research.

Overall, the field of OM has normalized construct validation, but some papers still exemplified the extra effort taken to verify the robustness of measures used and to provide clear and complete information on all steps taken ([Craighead et al., 2009](#); [Vaidyanathan and Devaraj, 2008](#)). For example, [Vaidyanathan and Devaraj \(2008\)](#) engaged a variety of methods to examine the validity of the constructs used. They reviewed the literature on which the scales were based and identified the reliabilities of the scales. The authors also employed exploratory and confirmatory factor analyses to lend support for the resource and capability constructs and the dependent variable. This approach provides a reader with strong confidence in the theoretical arguments and empirical support for the conclusions reached. Similarly, while many studies reviewed provided information to alleviate concerns of common method bias, the ability to collect information on the dependent variable independently from predictor variables lends stronger credence to conclusions about causality. For example, the [Craighead et al. \(2009\)](#) used both survey and archival measures to test the hypotheses allowing for independence in data sources used for the predictor and the outcome variables.

Although strong empirics lend confidence to theoretical assertions, they can also be used to help integrate and develop RBT. [Koufteros et al. \(2012\)](#) explore both supplier selection and integration using a survey methodology that is consistent with common empirics in the OM field. The examination of both selection and integration simultaneously and determining empirically that integration had no effect beyond that of selection offer insight into how relationships with suppliers can be strategically managed as resources to the firm.

Overall, while many articles reviewed had some of these attributes, these exemplar articles encompassed combinations of clear construct distinctions, integration across theories, and strong empirics to push the boundaries and extend our knowledge of RBT. For example, [Cannon and colleagues \(2008\)](#) examined boundary conditions of RBT by considering supplier and buyer relationships as external contingencies. [Koufteros et al. \(2012\)](#) show that strategic choices previously considered influential for performance can become irrelevant depending on selection choices based on compatibility with resources, while [Allred et al. \(2011\)](#) provide evidence for a new capability that may have important effects on firm outcomes. By taking opposing theoretical perspectives to those traditionally used in RBT research, new linkages and gaps in our knowledge of RBT can be identified and filled ([Ellram et al., 2013](#)). Finally, identifying and linking varying levels of analysis, such as supply chain and firm levels ([Craighead et al., 2009](#)), in combination with our identified themes, also help extend RBT and integrate research across the OM and strategy disciplines.

## 5. Discussion and conclusions

Our examination of the recent OM literature suggests that RBT has become an important theoretical paradigm to address critical research questions in the field. Evaluation of the articles highlights contributions to our knowledge of how resources are used in organizations, and some areas in which research using the RBT in OM could be improved.

One area in which OM research has extended our understanding and applicability of RBT is incorporating external resources. The examination of resources provided by external parties is especially relevant to work in supply chain management. [Priem and Butler \(2001\)](#) criticized the RBT for an exclusive internal focus. But research in supply chain management has shown that firms can enrich their resource portfolios by building relationships with, and having access to the resources of, their suppliers ([Paulraj, 2011](#)). Additionally, supply chain management research has shown that firms need valuable resources (e.g., information technology) to effectively manage relationships with their suppliers (i.e., enhance supply chain collaboration) ([Fawcett et al., 2011](#)). Resources are also relevant to research in OM, such as that focused on outsourcing (e.g., [Holcomb and Hitt, 2007](#)). For example, [Rothaermel et al. \(2006\)](#), found that firms using quasi integration were more innovative. Quasi integration is when firms outsource certain activities within a function but also retain specific activities in that function as well. When a complete function is outsourced (e.g., manufacturing), firms lose the capabilities associated with it and have difficulty rebuilding it within the organization if they want to do so at some time in the future. However, quasi integration allows firms to maintain this option. Perhaps as important, with quasi integration, key knowledge is retained within the firm that allows it to learn (absorb) knowledge from the supplier. [Rothaermel et al. \(2006\)](#) found that this ability to learn helped the firm to enrich its innovation capabilities and to produce more, and better, new products.

Relatedly, resource dependence theory provides new insights to studies on resources and dependence along the supply chain,



including quasi integration, new product development, and buyer–supplier relationship (Heide and John, 1988). Compared to RBT which focuses on the resources and resource characteristics, resource dependence theory emphasizes the joint dependence of resources between the focal firm and its external environments (Gulati and Sych, 2007). From this perspective, resource dependence of firms along the supply chain create both forbearance and trust (Crook and Combs, 2007; Ireland and Webb, 2007). Each firm tries to avoid dependence on its external environment and tries to make its buyers or suppliers to be dependent on it. Much of the research on resource dependence theory has emphasized dependence and power; yet, integrating it with the RBT can expand the horizons of each. Research questions in OM offer special opportunities to integrate these two theoretical perspectives. The current literature in the OM field has integrated transaction cost theory and resource dependence theory to explain how asset specificity and task complexity influence the dependence and mitigate or enhance the opportunism between suppliers and buyers (Mesquita and Brush, 2008). Integrating RBT can potentially shed new light on the research in this area by identifying how the characteristics of resources could change the power and dependence between buyers and suppliers.

Also, OM scholars have been sensitive to potential concerns about the applicability of the RBT to certain OM activities such as purchasing. In these cases, some scholars have adopted a resource based framework that has different assumptions and foci, such as the resource advantage theory, originally proposed by Hunt (2000) and adapted for OM by Hunt and Davis (2008). However, Barney (2012) made a reasoned argument in support of the RBT suggesting that some of the criticism of the RBT by those using RAT was based on faulty assessments and assumptions. OM researchers can consider both sides of the argument, carefully analyze the two theories, and select the one that best helps them address the research question they are studying.

Our evaluation also highlighted some concerns about OM research using RBT. For example, much of the research does not differentiate between resources and capabilities. This is understandable because the same criticism could be leveled at much of the strategic management research using the RBT. However, in recent years research has begun to differentiate the two constructs, especially after the earlier criticism regarding the lack thereof (e.g., Priem and Butler, 2001). For example, Sirmon et al. (2007) explained how resources were integrated to develop capabilities (as explained earlier). In fact, the nine OM studies examined herein that used arguments approximating that of resource orchestration proposed by Sirmon and his colleagues (e.g., Sirmon et al., 2011) were better able to differentiate the two constructs. They also more effectively identified the unique properties of resources, knowledge, and dynamic capabilities which are not well differentiated in much of the OM research.

Although there are exemplar methodologies among the OM studies on the RBT (e.g., development of generalizable measures, validation of key construct measures), there remains much room for improvement. OM researchers could enrich their research using the RBT by taking actions to ensure the construct validity of their measures and by engaging in more longitudinal research (or perhaps integrating qualitative approaches with more quantitative methods). These are not easy steps to take, especially with research grounded in the RBT and focusing on the supply chain as a unit of analysis, as is common in much of the OM research we reviewed. The lack of availability of data regarding resources and capabilities at the plant, operations, and supply chain units of analysis may significantly hinder researchers attempting to separate the measurement of predictor and outcome variables and limit the ability to track such resources and their outcomes over time. However,

despite these challenges, there remain opportunities. Specifically, studies can use a combination of qualitative and quantitative methods over time to better capture the variables and outcomes of interest. For example, in our review, we found examples of some papers capturing the longitudinal aspect of their theory by using multiple methods, interviews and surveys, spaced over multiple years (e.g., Allred et al., 2011). Another study focused on the separate capture of predictor and outcome variables using a combination of both survey and archival measures (Craighead et al., 2009). While addressing the empirical issues raised in our review is not an easy task, enriching the methodologies will allow OM scholars to make greater contributions to the field and to the development and extension of RBT.

While the above examples demonstrate the development of RBT occurring within the OM field, as well as some issues that may be hindering further integration, we expect the trend illustrated in Fig. 1 to continue, with more theoretical advancement occurring in the coming years as RBT is still relatively new to OM. As OM and strategic management researchers continue to work together, and the theoretical contributions migrate from one field to the other, we anticipate the rich questions available in the OM context to help spur new advances in RBT.

For example, future research is needed to identify resources that are strategic and those that are non-strategic. This question can be addressed not only for internal resources, but also those provided by external partners (e.g., alliance partners such as suppliers of raw materials or partners completing functional activities outsourced to them by the focal firm). Examining how to integrate internal and external resources and also strategic and non-strategic resources to gain a competitive advantage could provide a valuable contribution. Ellram et al. (2013) did some initial work that provides grounding for additional research in this area. It may be useful to integrate the resource dependence and social capital (relational capital) theories with the RBT to address these questions.

As noted earlier, there is a need for additional research on international perspectives. While there are examples of excellent international research occurring outside of our reviewed journals (e.g., Ding et al., 2012), these top scholarly outlets do not preclude international studies. As such, we believe there is an opportunity for greater international research in these top scholarly journals. More specifically, future research could examine and attempt to understand the resource opportunities and outcomes flowing from entering new international markets and/or engaging in supply alliances with foreign partners. Future research in this area could build on the work of Ang and Inkpen (2008). They identified three types of intercultural intelligence, managerial, competitive and structural, that could be useful in outsourcing business activities and functions to foreign partners. In another example of interesting international OM research opportunities, Martin et al. (1998) examined the strategic implications of a supplier's relationships with buyers, rivals, and non-competing suppliers for international expansion. These authors focused on the cooperative relationships as the resources that led to the decision to pursue international opportunities.

There are several important research questions that could be addressed with regard to cooperative relationships along the supply chain. Could sharing resources with non-market rivals result in the emergence of new rivals (e.g., inadvertently helping a partner to develop capabilities that eventually allow it to enter and compete with the focal firm)? What are the potential outcomes when rivals have a relationship with the same supplier (i.e., both obtain resources from this supplier)? If the resources obtained from the supplier are the same, they are unlikely to contribute to a competitive advantage of one rival over the other according to RBT. Alternatively, do the rivals compete with each other to obtain

valuable and unique resources that could contribute to a competitive advantage for one of them? How do firms obtain valuable resources from external sources (e.g., supply chain partners) that are rare (not available to others) and help the firm to create capabilities that are difficult to imitate and are non-substitutable?

Although several important theories have been integrated with RBT in OM research including transaction cost (Williams et al., 2002), relational/social capital theory (Mesquita et al., 2008), and some competing theories examined simultaneously (e.g. Kocak and Ozcan, 2013), there is still little research using institutional theory in studies of RBT in OM. However, formal (and informal) institutions influence the type and level of resources available to firms in a country or region (Holmes et al., 2013). Thus, country institutions likely influence both resource acquisition and how resources are used (e.g., regulations of natural resources, laws regarding the management of human resources). Laws and regulations can be used to protect a firm's valuable technologies integrated in their operations (e.g., intellectual property protection).

Thus, these institutions likely influence the locations of operations (e.g., manufacturing facilities, R&D centers) in one country versus another, and they also may affect decisions regarding foreign supply partners and those regarding what parties to include in managers' social networks for access to resources (see for example, Batjargal et al., 2013). These are only a few of the potential research issues that could be addressed in OM using institutional theory particularly in an international context.

Our analysis identified richness in the OM research that has potential to produce multiple contributions for this field and for adjacent fields as well. For example, there are significant complementarities between the fields of strategic management and OM. Answering research questions about strategic alliances, supply chain management, and outsourcing could inform the theoretical and empirical research across these important areas of inquiry. OM research makes contributions to our knowledge of design and development of new products (product innovation) and important contributions to our understanding of strategy implementation.

#### APPENDIX A

##### Summaries of Reviewed Articles

| Year | Author (Journal) <sup>a</sup>  | Theories used or integrated with RBT                       | Key points of Paper   | Use or interpretation of RBT  | Categories  |
|------|--|--|---|---|---|
| 2007 | Barratt and Oke (JOM)  |  | Explores the antecedents of high levels of supply chain visibility from a resource-based theory perspective across five different external supply chain linkages  | Distinctive or high level of visibility as resources can give a sustainable competitive advantage to a supply chain linkage             | Supply chain management                             |
| 2007 | Das and Bুদ্ধress (JSCM)   |  | Identifies and prioritizes e-provider evaluation criteria from buyers' perspectives and relates these criteria to evidence of achieved performance  | Focuses on the role of external value-network-resources' resources in developing firm-specific capabilities                             | Supply chain management, performance management     |
| 2007 | Froehle and Roth (POM)   | Process-Oriented perspective                               | Provides precise operational definitions of new service development practice constructs   | Focuses on three broad types of resources (physical, human, and organizational) in developing a framework of constructs                 | Product/service innovation                          |
| 2007 | Grewal and Slotegraaf (DS)   | Resource Management  | Managerial decisions on resource acquisition and deployment influence capability embeddedness   | Capability embeddedness has an incremental effect on firm performance beyond the effects from organizational resources and capabilities | Operations strategy                                 |
| 2007 | Holcomb and Hitt (JOM)   | Transaction Cost Theory                                    | Complementarity of capabilities, strategic relatedness, relational capability-building mechanisms, and cooperative experience are four important resource-based reasons to consider strategic outsourcing beyond transaction cost reasons | Resources and capabilities are one of the reasons for strategic outsourcing   | Supply chain management, operations strategy        |
| 2007 | Hult, Ketchen, and Arrfelt (SMJ)                                       | Organization Learning; Behavioral Theory                   | Argues that cultural competitiveness and knowledge development operate in tandem to achieve superior performance; also finds evidence of environmental contingencies on these relationships   | A focus on studying resources "where resources reside" by investigating sources of performance in the supply chain                      | Supply chain management, performance management     |
| 2007 | Johnson, Klassen, Leenders, and Awaysheh (IJOPM)                       | Transaction Cost Theory, Social Network Theory             | Offers explanations of supply chain management using TCE, RBV, and social network theory  | RBT provides new insights into new product development and lies at the heart of the customer equity approach to services marketing      | Supply chain management, product/service innovation |
| 2007 | Johnson, Klassen, Leenders, and Awaysheh (JOM)                         | Transaction Cost Theory, Relational View                   | Identifies two forms of e-business technology, transactional and relational technologies  | Uses resources as a moderator of transactional and relational technologies  | Operations strategy                                 |
| 2007 | Martinez-Sanchez, Vela-Jimenez, Luis-Carnicer, and Perez-Perez (IJOPM) |  | Explains the impact of workplace flexibility on managers' perception of firm performance  | Uses RBT to explain differentiation strategy  | Operations strategy, performance management         |
| 2007 | Mesquita, Lazzarini, and Cronin (IJOPM)                                | Dynamic Capabilities, Network Theory, Institutional Theory | Firms create competitive advantage when they are successful in creating linkages with critical suppliers that successfully exclude competitors from forming the same relationships  | Investments in new resources and capabilities is positively associated with firm production efficiency gains                            | Supply chain management, performance management     |
| 2007 | Rosenzweig and Roth (JOM)  |  | Develops and validates scales for measuring B2B seller competence associated with the seller-side of internet enabled commerce  | Infrastructural (or soft) competences are required for leveraging B2B commerce  | Supply chain management                             |
| 2007 | Smart, Bessant, and Gupta (IJOPM)                                      | Dynamic Capabilities                                       | Argues firms need to produce design-oriented knowledge for configuring inter-organizational networks as a means of accessing resources for innovation   | Dynamic capability as a new development of RBT  | Product/service innovation, operations strategy     |

## APPENDIX A (continued)

| Year | Author (Journal) <sup>d</sup>              | Theories used or integrated with RBT   | Key points of Paper   | Use or interpretation of RBT  | Categories   |
|------|--|--|---|---|--|
| 2007 | Stratman (POM)                             | Socio-Technical Systems Theory   | Explores when the firms could benefit from enterprise resource planning (ERP) based on their strategic objectives   | ERP do not provide firms with competitive advantages because it has become a commodity, RBT holds that competitive advantage is derived from inimitable resources   | Operations strategy  |
| 2007 | Wang and Wei (DS)                          | Transaction Cost Theory  | Firms can gain greater supply chain flexibility within existing interfirm relationships by enhancing information visibility through virtual integration and relational governance   | Enhancing gain from collaboration-specific capabilities leads to the competitive advantage of a supply chain  | Supply chain management  |
| 2008 | Ang and Inkpen (DS)                        | Dynamic Capabilities   | Firm-level intelligence is important in the context of international business ventures such as offshoring   | Proposed three dimensions of intercultural capabilities of the firm: managerial, competitive and structural   | Operations strategy  |
| 2008 | Azadegan, Bush, and Dooley (IJOPM)         | Dynamic Capabilities   | Suggests that design creativity is a static capability, but depending on personality traits, it may be developed in some individuals  | Suggests RBT represents a steady-state perspective that supports the notion of buying instead of developing RVIN resources  | Operations strategy  |
| 2008 | Cannon, Reyes, Frazier, and Prater (IJOPM) | Transaction Cost Theory, Resource Dependence Theory                          | Explores the benefits, complexities, and risks accompanying the adoption of radio-frequency identification (RFID) technology  | Adopters of RFID will see greater benefits when their implementation clarifies the link between advantage-supporting resources and performance  | Operations strategy, Product/service innovation                      |
| 2008 | Cousins, Lawson, and Squire (IJOPM)        | Social Network Theory  | Investigates the mediating role of socialization mechanisms between the relationship of supplier performance measures (communication and operational-based) and firm performance  | Complementary resource combinations between partnering firms can be a source of competitive advantage, with the idiosyncratic nature of the relational assets making imitation by competitors difficult       | Supply chain management, performance management                      |
| 2008 | De Fontenay and Gans (SMJ)                 |  | Examines the costs and benefits of upstream outsourcing decisions between outsourcing to an established or independent firm and finds evidence to support the choice of outsourcing to an established firm  | Models upstream and downstream resources owned by firms in order to better understand outsourcing decisions   | Supply chain management  |
| 2008 | Fung (POM)                                 |  | Suggests a more efficient use of human resources covers the required increase in information technology expenditures  | Focuses on the firm as a collection of human, technology, and capital resources   | Operations strategy, performance management                          |
| 2008 | Gaimon (POM)                               | Dynamic Capabilities   | Highlights the breadth and multidisciplinary nature of management of technology and the variety of methods employed   | RBT suggests the performance of firms' technical systems and work force depends on the organizational structures and managerial systems in which they operate   | Operations strategy  |
| 2008 | Holweg and Pil (JOM)                       | Dynamic Capabilities Complex Adaptive Systems, Adaptive Structuration Theory | Uses case studies to assess the applicability of RBT, the concept of complex adaptive system (CAS), and adaptive structuration theory (AST) to supply chain coordination  | Suggests that RBT/DC shortcoming in this area is its masking of complexity in the supply-chain system due to its focus on only the focal firm   | Supply chain management  |
| 2008 | Hunt and Davis (JSCM)                      | Neoclassical Economics, Resource Advantage Theory                            | Suggests purchasing cannot be a source of long-term competitive advantage   | Compares resource advantage theory and RBT  | Operations strategy, performance management                          |
| 2008 | Jeffers, Muhanna, and Nault (DS)           | Resource Management  | Finds the net effect of an IT resource depends on the nature and strength of the interactions it has with other resources in the bundle that makes up the firm  | Without a distinctive competence or capacity to manage and make better use of resources, a firm cannot achieve a competitive advantage in the short term or a sustained competitive advantage in the long run | Operations strategy, performance management                          |
| 2008 | Lai, Li, Wang, and Zhao (JSCM)             |  | Investigates the antecedents and consequences of IT capability among third party logistics providers  | Labor-saving technology fits VRIN criteria  | Supply chain management, product/service innovation                  |
| 2008 | Luo (SMJ)                                  | Loose Coupling Theory  | Introduces the concept of economic integration in alliances and suggests that it has a positive effect on alliance stability but a diminishing effect on alliance profitability   | Doesn't use RBT explicitly but suggests that economic integration accentuates structural and resource coupling between investing entities that remain legally and physically independent                      | Operations strategy  |
| 2008 | Menor and Roth (POM)                       |  | Develops a four dimensional concept of new service development competence   | Technical system and work force are a firm's resource capabilities that must be carefully managed to drive competitive advantage  | Product/service innovation, operations strategy                      |
| 2008 | Mesquita, Anand, and Brush (SMJ)           | Relational View  | Finds that advantages due to a superior supply chain may spillover to rivals due to overlap of suppliers, but relationship-specific assets and capabilities continue to create additional, exclusive performance benefits                                   | Uses RBT to explain the performance gains of suppliers that can spillover across firms, but suggests that the relational view reveals the unique performance that is dyad-specific                            | Performance management, supply chain management                      |
| 2008 | Mesquita and Lazzarini (AMJ)               | Transaction Cost Theory, Institutional Theory                                | Finds that SMEs can use collaboration to develop competencies and efficiencies that enable them to access global markets: vertical ties yield manufacturing productivity while horizontal ties enable collective resources use and joint product innovation | Uses RBT to discuss how coordinated efforts to "articulate distinct sets of interfirm resources and competencies allow SMEs to attain collective efficiencies"  | Operations strategy  |
| 2008 | Novak and Stern (MS)                       | Knowledge Based View   | Outsourcing is associated with higher levels of initial performance while vertical integration will be associated with performance improvement over the product life cycle  | Vertical integration is a prerequisite for internal capability and knowledge development over time  | Supply chain management, operations strategy, performance management |

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## APPENDIX A (continued)

| Year | Author (Journal) <sup>a</sup>              | Theories used or integrated with RBT                 | Key points of Paper   | Use or interpretation of RBT   | Categories  |
|------|--|--|---|--|---|
| 2008 | Ordanini and Rubera (IJOPM)                | Dynamic Capabilities                                 | Investigates the link between procurement capabilities, internet resources, and performance   | RBV is a useful perspective for understanding new service development competence and whether this competence provides a basis from which a competitive advantage can be obtained and sustained | Operations strategy, performance management                             |
| 2008 | Paiva, Roth, and Fensterseifer (JOM)       | Knowledge Based View                                 | Organizational knowledge (distinct from information) is a resource that allows manufacturing to seek a higher integration with other functions under current environment conditions   | Design creativity provides a competitive advantage and is a dynamic resource that should be enhanced through integration with learning   | Product/service innovation, operations strategy                         |
| 2008 | Peng, Schroeder, and Shah (JOM)            | Dynamic Capabilities                                 | Improvement and innovation are two critical plant level capabilities, each consisting of a bundle of interrelated yet distinct routines and exerting their effects on a set of operational performance measures                               | RFID-enabled clarity would be associated with competitive advantage  | Product/service innovation, performance management                      |
| 2008 | Prajogo, McDermott, and Goh (IJOPM)        | Dynamic Capabilities, Value Chain                    | Collaborative advantage is a resource that requires a long-term orientation and may ultimately create greater benefits than a traditional zero-sum based approach to competition  | Assesses the relationship between the different resources, capabilities and core competences of the value chain, product quality, and innovation.  | Operations strategy, product/service innovation                         |
| 2008 | Safizadeh, Field, and Ritzman (SMJ)        | Transaction Cost Theory, Knowledge Based View        | Volume and customization drive financial service firms to maintain back-office activities in house as opposed to outsourcing  | Key capabilities such as flexibility, innovation, and speed to market, could create difficulties for a firm if back-office activities are outsourced.  | Supply chain management   |
| 2008 | Vaidyanathan and Devaraj (JOM)             | Dynamic Capabilities, Resource Management            | Argues that online information and processes act as resources that result in logistics fulfillment capabilities which in turn lead to satisfaction with e-procurement.  | Capabilities mediate the relationship between resources such as information and procedures and performance.  | Operations strategy, performance management                             |
| 2008 | Vivek, Banwet, and Shankar (JOM)           | Transaction Cost Theory                              | Argues that objectives in alliances evolve from tactical to strategic in offshoring alliances and specific investments mirror the complex, dynamic relationships between investments in core, transactional, and relationship-specific assets | Performing value chain activities in ways that would give a firm the capability to outmatch rivals is a potential source of competitive advantage  | Operations strategy   |
| 2009 | Broedner, Kinkel, and Lay (IJOPM)          | Transaction Cost Theory                              | Investigates productivity effects of outsourcing under control of other relevant factors influencing firm level productivity  | Use RBT to explain competence formation and vertical integration   | Supply chain management, operations strategy, performance management    |
| 2009 | Craighead, Hult, and Ketchen (JOM)         | Knowledge Based View, Strategic Choice Theory        | Knowledge development capacity and intellectual capital jointly influence product-specific responsiveness depending on the particular innovation-cost strategy  | The interaction between knowledge development capacity and intellectual capital creates a strategic resource for the cost-efficient innovator  | Product/service innovation, operations strategy                         |
| 2009 | Gray, Tomlin, and Roth (POM)               | Dynamic Capabilities, Competitive Progression Theory | Partial outsourcing, wherein the OEM simultaneously outsources and produces in-house, can be an optimal strategy and that outsourcing strategy may change from period to period   | Integrates RBT, DC, and progression theory to suggest current decisions regarding production affect future production capabilities   | Supply chain management   |
| 2009 | Jayanthi, Roth, Kristal, and Venu (MS)     |  | Conceptualizes strategic decision-making process within a manufacturing firm as streams of resources allocated to short- and long-term changes  | The survival of a firm is dependent on the judicious utilization of resources that enhance the firm's adaptation to its external environment   | Operations strategy   |
| 2009 | Jimenez-Jimenez and Martinez-Costa (IJOPM) | Human Resource Management                            | Investigates whether companies could succeed in implementing the behavioral side of TQM that encompasses leadership, human resources and customer orientation   | Human resource management is a key element in the implementation of total quality management   | Operations strategy   |
| 2009 | McIvor (JOM)                               | Transaction Cost Theory                              | Offers a framework for outsourcing evaluation   | Review of RBT and TCE as they relate to outsourcing  | Supply chain management   |
| 2009 | McKone-Sweet and Lee (JSCM)                | Dynamic Capabilities, Configuration                  | Explores the relationship between the supply chain strategy groups and contextual factor, competitive priorities, and firm performance  | Defines supply chain taxonomy based on RBT by using six supply chain capabilities  | Supply chain management   |
| 2009 | Mishra and Shah (JOM)                      | Dynamic Capabilities                                 | Develops theory and scale for collaborative competence in new product development and finds support for its influence on both project and market performance  | Organization's skills in leveraging IT are a source of resources as they tend to be heterogeneously distributed across firms, reflecting the unique history of a firm                          | Operations strategy, product/service innovation, performance management |
| 2009 | Pullman, Maloni, and Carter (JSCM)         |  | Provides a framework for examining the enterprise's performance as a result of its sustainable sourcing and facility management practices   | Outsourcing influences path-dependent capabilities   | Supply chain management, performance management                         |
| 2009 | Squire, Cousins, Lawson, and Brown (IJOPM) | Dynamic Capabilities                                 | Competitive advantages of specific internal capabilities is a prevailing criteria for boundary decisions  | Emphasizes the need to consider the impact of suppliers' capabilities on buyer firm performance  | Supply chain management, performance management                         |

## APPENDIX A (continued)

| Year | Author (Journal) <sup>a</sup>                     | Theories used or integrated with RBT                         | Key points of Paper  | Use or interpretation of RBT  | Categories  |
|------|---|--|--|---|---|
| 2009 | Wallace, Johnson, and Umesh (DS)                  | Dynamic Capabilities, Agency Theory                          | Poses multi-channel distribution misalignment as an agency issue and suggests developing capabilities as a means to address the issue and increase performance   | The soft dimension of TQM tends to be more socially complex and more difficult for other organizations to imitate, thus becoming a source of competitive advantage  | Operations strategy, performance management                                 |
| 2009 | Yao, Dresner, and Palmer (JSCM)                   |  | The level of supply chain collaboration has an important interaction effect on the relation between external resources and buying firm performance, where collaborative forms of buyer–supplier exchange facilitate greater access to external resources | Uses RBT to explain how boundary-spanning information technologies are perceived to impact performance improvement  | Supply chain management, performance management                             |
| 2010 | Bustinza, Molina, and Gutierrez –Gutierrez (JSCM) | Knowledge Based View   | The nature of the knowledge outsourced affects the success of the outsourcing; supports the notion that a firm maintains a certain quality of knowledge about the outsourced activity, even though it is no longer performed internally                  | Analyzes outsourcing from a knowledge-based perspective   | Supply chain management, performance management                             |
| 2010 | Camison and Lopez (IJOPM)                         | Dynamic Capabilities   | Examines the indirect effects of manufacturing flexibility on organizational performance considering product, process, and organizational innovation as mediating variables  | Organizational capabilities can create competitive advantages, thus they mediate manufacturing flexibility and performance  | Operations strategy, product/service innovation, performance management     |
| 2010 | Chen (SMJ)  | Transaction Cost Theory                                      | Explores the transaction cost of private branding and finds evidence that investments in marketing resources can decrease transaction costs associated with brand specificity  | Marketing investment and subsequent reputation effects can deflect asset specificity costs in transactions  | Operations strategy   |
| 2010 | da Silveira and Sousa (IJOPM)                     | Dynamic Capabilities, Knowledge Based View                   | Capability learning and best practices are positively related to performance improvements in quality, flexibility, and dependability, whereas internal fit appears to be negatively related to flexibility improvements                                  | Improving performance can be achieved through building capabilities and/or adopting best practices  | Operations strategy, performance management                                 |
| 2010 | Fuchs and Kirchain (MS)                           |  | Examines the design/facility location decision in optoelectronic component manufacturers   | A firm's optimal strategy choice between development of new technologies at home and moving discrete production to low-wage countries depends on the firm's resources   | Supply chain management, performance management                             |
| 2010 | Jeffers (IJOPM)                                   | Dynamic Capabilities   | Examines the potential mediating role of an “operations-as-marketing” strategy in framing IT investment decisions  | Possessing valuable, rare information technology (IT) resources that competitors cannot easily reproduce or replicate provides a competitive advantage, but mere ownership of such resources is no guarantee of competitiveness | Operations strategy, product/service innovation                             |
| 2010 | Kroes and Ghosh (JOM)                             | Knowledge Based View, Agency Theory, Transaction Cost Theory | Suggests that outsourcing congruence (a fit or interaction between a firm's outsourcing drivers and competitive priorities) leads to better supply chain performance and better overall performance  | Outsourcing congruence leads to competitive advantage   | Operations strategy   |
| 2010 | Lewis, Brandon –Jones, Slack, and Howard (IJOPM)  |  | Unbounded external resources, such as the role of suppliers engaged in new product development, can create an initial advantage for firms  | Examines the different ways in which “classic” and “extended” resource-based advantage develops and how they might combine to create long-term advantage  | Supply chain management, performance management                             |
| 2010 | Power, Schoenherr, and Samson (JOM)               | Theory of Performance Frontiers                              | Explores contingency of collectivism/individualism on resource investments and finds that not only do collectivist countries invest more in the operating frontier, but they received higher returns on those investments                                | RBT is used to explain outsourcing decisions in firms   | Supply chain management, performance management, product/service innovation |
| 2010 | Reuter, Foerstl, Hartmann, and Blome (JSCM)       | Dynamic Capabilities   | Analyzes how the purchasing and supply management function integrates sustainability aspects in the global supplier management processes   | Both explicit and tacit categories of IT resources improve financial performance  | Supply chain management, performance management                             |
| 2010 | Sarkis, Gonzalez-Torre, and Adenso-Diaz (JOM)     | Dynamic Capabilities, Stakeholder Theory                     | Finds the adoption of environmental practices motivated by stakeholder pressures is mediated by environmental training efforts aimed at employees within the organization  | Training as a resource creates competitive advantages   | Supply chain management, performance management                             |
| 2010 | Wu, Melnyk, and Flynn (DS)                        |  | Argues that development of operational capabilities is distinct from resources and operational practices; identifies six dimensions of operational capabilities and offers scales for measurement  | External and internal learning fit VRIN criteria  | Operations strategy   |
| 2011 | Allred, Fawcett, Wallin, and Magnan (DS)          | Dynamic Capabilities   | Evaluates the influence of collaboration on operational and firm performance   | Internal supply chain resources can be configured to achieve inimitable advantage and superior performance, but so does superior coordination among diverse members of a supply chain   | Operations strategy   |

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## APPENDIX A (continued)

| Year | Author (Journal) <sup>a</sup>                       | Theories used or integrated with RBT                                  | Key points of Paper  | Use or interpretation of RBT   | Categories  |
|------|---|---|--|--|---|
| 2011 | Bititci et al. (IJOPM)                              | Dynamic Capabilities  | Organizational learning through networking and effective management of knowledge is seen as a critical competence that enables organizations to develop innovative responses in emerging unpredictable contexts and thus sustain competitive advantage and performance                                       | Identifies managerial processes and how they influence organizational performance  | Supply chain management, performance management     |
| 2011 | Dekkers (IJP&OM)                                    | Transaction Cost Theory   | Findings from five case studies suggest that outsourcing may not contribute to competitive advantage and decisions may not account for operational issues that emerge during manufacturing   | Compares the use of transaction-cost economics, resource-based theory and core competencies to justify the rationale behind strategic decisions on outsourcing   | Operations strategy, performance management         |
| 2011 | Fawcett, Wallin, Allred, Fawcett, and Magnan (JSCM) | Dynamic Capabilities  | Investigates the mechanisms through which information technology influences supply chain performance   | Finds that IT investments make their greatest competitive contribution when they enable a dynamic supply chain collaboration capability  | Supply chain management, operations strategy        |
| 2011 | Hartmann and Grahl (JSCM)                           |   | Develops a conceptual model of flexibility as a capability of logistic service providers and its impact on customer loyalty  | Develops flexibility as a capability and potential source of competitive advantage   | Operations strategy                                 |
| 2011 | Hitt (JSCM)   | Transaction Cost Theory, Organization Learning, Social Capital Theory | Explores several theoretical perspectives in strategic management for use in supply chain management research  | Resource management is a new development of RBT  | Supply chain management, operations strategy        |
| 2011 | King and Slotegraff (DS)                            |   | Investigates the relationship of inventory, production, and marketing resource efficiency of firms with financial performance  | Firm resource investments decisions have impact beyond firm performance  | Operations strategy, performance management         |
| 2011 | Modi and Mishra (JOM)                               |   | Finds that resource efficiency drives financial performance, but has diminishing returns   | Uses RBT in resource efficiency versus resource flexibility arguments  | Operations strategy, performance management         |
| 2011 | Paulraj (JSCM)                                      | Dynamic Capabilities  | Evaluates the effect of firm-specific resources (enviropreneurship and strategic purchasing) on sustainable supply chain management and sustainability performance   | Enviropreneurship and strategic purchasing are recognized as firm-specific capabilities and resources that are fundamental to pursuing sustainable supply practices  | Supply chain management, performance management     |
| 2011 | Prajogo (IJOPM)                                     | Institutional Theory  | Explores the extent to which four elements of the value chain – marketing, research and development, procurement, and operations – are associated with product quality and product innovation.   | Internal motives manifest firm's commitment to build competitive resources in their operational system   | Operations strategy, product/service innovation     |
| 2011 | Song, Song, and Di Benedetto (JOM)                  |   | Argues that new ventures have limited financial and human capital, thus they benefit from coordinating with suppliers early on to supplement their limited resources for a first product launch; finds that a strong new product launch is actually more important than high innovativeness in a new product | Organizational learning through networking and effective management of knowledge is seen as a critical competence that enables organizations to develop innovative responses in emerging unpredictable contexts and thus sustain competitive advantage and performance                     | Supply chain management, product/service innovation |
| 2011 | Terjesen, Patel, and Covin (JOM)                    | Resource Management   | Finds the value of the capabilities on low operating costs and high product quality is enhanced by alliance partner diversity, alliance geographic diversity, and environmental munificence  | Firms driven by internal motives consider competitive capabilities, such as high quality, reliable delivery, and competitive cost, as the primary purpose as well as the real value of adopting the ISO 9000 standard  | Operations strategy, performance management         |
| 2011 | Zhang, van Donk, and van der Vaart (IJOPM)          |   | Review of Information and Communication Technology (ICT) and supply chain management and performance   | Suggests that across studies reviewed ICT is a firm resource   | Supply chain management, performance management     |
| 2012 | Barney (JSCM)                                       |   | Rebuttal to Ramsay (2001) and Hunt and Davis (2008) articles, argues that supply chains can be a source of competitive advantage   | Strategic factor market logic suggests that purchasing and supply chain capabilities are heterogeneous across firms and can be a source of competitive advantage   | Supply chain management, performance management     |
| 2012 | Fawcett, Fawcett, Watson, and Magnan (JSCM)         | Dynamic Capabilities  | Examines the difficulties in implementing and developing a collaborative capability through structured interviews  | Collaborative capability is a dynamic capability   | Operations strategy                                 |
| 2012 | Greer and Theuri (JSCM)                             | Resource Advantage Theory   | Investigates the robustness of the relationship between supply chain effectiveness and the overall financial health of firms viewed as supply chain leaders  | When firms manage their supply chains and establish trust-based working relationships with suppliers, the results can be “supply chain” capabilities or intangible resources that are so unique to that company that it gives them an advantage that ultimately increases firm performance | Supply chain management, performance management     |
| 2012 | Handley (JOM)                                       | Knowledge Based View, Relational Theory                               | Inadequate capability evaluation up front leads to a more substantive capability loss that decreases outsourcing performance as well as inhibits firm's ability to effectively develop a committed and cooperative relationship with the outsourcing provider  | Outsourcing may lead to capability loss  | Supply chain management, operations strategy        |

## APPENDIX A (continued)

| Year | Author (Journal) <sup>a</sup>                  | Theories used or integrated with RBT                                     | Key points of Paper   | Use or interpretation of RBT  | Categories  |
|------|--|--|---|---|---|
| 2012 | Hunt and Davis (JSCM)                          | Resource Advantage Theory  | Compares RBT and resource advantage theory and discusses similarities and differences   | Offers a broader definition of resources  | Operations strategy                                 |
| 2012 | Koufteros, Vickery, and Droge (JSCM)           | Dynamic Capabilities   | Examines whether the strategic selection of suppliers based on supplier new product development capability, supplier quality capability and supplier cost capability directly and/or indirectly enhances the buyer's competitive performance capabilities in the matched domains of buyer product innovation, buyer quality and buyer competitive pricing, respectively | Strategic supplier selection is the capability of a buyer to select a supplier with resources and expertise in a specified domain and enhances the buyer's performance capability in the matched domain | Supply chain management, product/service innovation |
| 2012 | Mahapatra, Das, and Narasimhan (JOM)           | Transaction Cost Theory, Contingency Theory, Strategic Choice Theory     | Examines the relevance and effectiveness of the two collaborative strategies (supplier development and close relationship building) across the growth and maturity stages of the product life cycle   | Relational orientation can have a foundational role in motivating supplier development investments for superior supplier capability   | Supply chain management                             |
| 2012 | Oh, Teo, and Sambamurthy (JOM)                 | Dynamic Capabilities, Organization Learning Theory                       | Finds that retail channel integration through the use of IT allows firms to be efficient in delivering the current offerings and innovative in creating future offerings; environmental dynamism positively moderates the effects of innovation ability on performance  | The ability of information technologies (ITs) to integrate activities and offerings across multiple channels offers a promising opportunity for retail firms to enhance competitive advantage           | Product/Service innovation, performance management  |
| 2012 | Oliveira and Roth (POM)                        | Dynamic Capabilities, Knowledge Based View                               | Develops a new construct of B2B e-service capability and investigates how service orientation and customer receptivity to technology influence the B2B e-service capability   | Five dimensions of best service practices have been attributed to the RBT and KBV of competitive advantage  | Operations strategy                                 |
| 2012 | Perunovic, Christoffersen, and Mefford (IJOPM) | Dynamic Capabilities   | Explores how vendors deploy their capabilities in order to win, run and renew the outsourcing contracts   | The capability mixes lead to competitive advantages   | Supply chain management                             |
| 2012 | Priem and Swink (JSCM)                         | Dynamic Capabilities, Value Chain  | Recommends that the nascent demand-side perspective on strategic management can provide new insights and a more complete understanding of supply chain management's role in competition   | Market orientation is a specific firm-level resource that facilitates firms to sense marketplace requirements and to leverage the value of other capabilities that connect firms to external networks   | Supply chain management                             |
| 2012 | Schoenherr and Swink (JOM)                     | Relational view  | Cross-validates "arcs of integration" concept across a more recent and diverse sample of firms, develops arguments for the expected direct and interacting effects of external and internal integration efforts   | A collection of synergistic internal competencies can lead to competitive capabilities, and in turn, create unique customer value   | Service operation, operations strategy              |
| 2012 | Schoenherr, Power, Narasimhan, and Samson (DS) |  | Suggests that the capabilities among plants in industrialized nations are less able to influence each other and the potential of competitive capabilities may have diminished in terms of their ability to further influence an outcome in plants located in industrialized economies   | The traditional view of capability is static. Since outsourcing is a dynamic process, a vendor's capabilities must also be studied in a dynamic context   | Supply chain management, operations strategy        |
| 2013 | Ceccagnoli and Jiang (SMJ)                     | Transaction Cost Theory, Dynamic Capabilities, Game Theory               | Argues that suppliers' knowledge transfer capability, buyer absorptive capacity and cospecialization of R&D and downstream activities drives transfer costs and thus licensing versus forward integration decisions   | Suggests that both supplier- and buyer- related capabilities can influence the cost of transferring knowledge between firms   | Supply chain management                             |
| 2013 | Ellram, Tate, and Feitzinger (JSCM)            | Factor Market Theory   | Examines competition among diverse industries in factor markets using the example of supply chain services and the lens of factor-market rivalry theory   | Many non-strategic resources are necessary as inputs into the supply chain, thus expanding the consideration of firms that are not rivals in product markets but are in factor markets                  | Supply chain management                             |
| 2013 | Golicic, and Smith (JSCM)                      | Resource Advantage Theory  | Overall impact of environmentally friendly supply chain practices positively relate to market, operational, and accounting based forms of firm performance; multiple moderators including industry, region, size, and item are examined as well   | Environmental sustainability as a resource is beneficial to firm performance  | Supply chain management, performance management     |
| 2013 | Leuschner, Rogers, and Charvet (JSCM)          | Resource Advantage Theory, Knowledge Based View, Transaction Cost Theory | Meta-analysis examining the relationship between supply chain integration and firm performance  | Internal/cross-functional and external integration with customers and suppliers can be complex and requires unique capabilities that may be difficult or costly to implement                            | Supply chain management, performance management     |
| 2013 | Liu, Ke, Wei, and Hua (IJOPM)                  |  | Investigates the impact of two different dimensions of supply chain integration on two aspects of firm performance in China   | Considers information sharing, operational coordination, and market orientation as resources  | Supply chain management, performance management     |
| 2013 | Mclvor (JSCM)                                  | Dynamic Capabilities, Transaction Cost Theory                            | Examines how the variables from RBT and TCT interact and influence the manufacturing location decision  | RBT is used to assist with analyzing manufacturing capabilities, which can link the decision with performance and the competitive position of the organization  | Operations strategy, performance management         |

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## APPENDIX A (continued)

| Year | Author (Journal) <sup>a</sup>    | Theories used or integrated with RBT | Key points of Paper  | Use or interpretation of RBT  | Categories                                      |
|------|----------------------------------|--------------------------------------|--|---|---|
| 2013 | Mena, Humphries, and Choi (JSCM) | Transaction Cost Theory              | Shows the impact that the dynamics of the multi-tier supply chain (MSC) have on power balance, structure, interdependence, and relationship stability inherent in MSCs   | Uses RBT in describing inconsistent findings in terms of the effect of purchasing on competitive advantages | Supply chain management                         |
| 2013 | Weigelt (SMJ)                    | Dynamic Capabilities                 | Focuses on exploring how firms gain performance benefits from supplier capabilities that are readily available to multiple competing firms; finds that in-sourcing can create benefits with operational capabilities, but in firms with weaker operational capabilities, outsourcing enables clients to reduce their capability disadvantage | Argues that the location of supplier capabilities is important to client performance                        | Supply chain management, performance management |

<sup>a</sup> AMJ = Academy of Management Journal, DS = Decision Sciences, IJOPM = International Journal of Operations and Production Management, JOM = Journal of Operations Management, JSCM = Journal of Supply Chain Management, MS = Management Science, POM = Production and Operations Management, and SMJ = Strategic Management Journal.

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