THE PENNSYLVANIA STATE UNIVERSITY
SCHREYER HONORS COLLEGE

DEPARTMENT OF MANAGEMENT AND ORGANIZATION

ACADEMIC RESEARCH TODAY: ESTABLISHING A COLLABORATIVE RESEARCH AGENDA IN SUPPLY CHAIN MANAGEMENT BETWEEN PROCUREMENT, MARKETING, OPERATIONS, AND INFORMATION TECHNOLOGY

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SPRING 2010

A thesis submitted in partial fulfillment of the requirements for a baccalaureate degree in Management with honors in Management

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Abstract

The primary objective of this study is to identify research opportunities in the procurement field using an interdisciplinary model linking research in the purchasing/logistics, operations, information technology (IT), and marketing fields. Since supply chain touches so many different parts throughout all stages of the business process, it is claimed by several different functions within a business. This means that researchers in multiple areas (such as operations, purchasing, marketing, and information technology) have an interest in investigating various aspects of the supply chain and supply chain management. In order to identify potential research opportunities in the supply chain, major procurement journals were chosen based on relevance and rating. Information was gathered from these journals issued from January 2005 through December 2008. The keywords “supply chain management” and “SCM” were utilized to identify relevant articles. The information gathered enabled the identification of research areas from each of the interdisciplinary areas, with purchasing being the focal point. The results provided overlapping research areas which are now being concurrently, but not necessarily collaboratively, investigated. Further, this study identifies areas that called for collaboration between each function and the purchasing field. Thus, the study identifies a collaborative research agenda for procurement researchers.
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Introduction

Supply chain management (SCM) is a term that describes the movement of materials from raw materials through the transformation process to after-sales service ("CSCMP supply chain management definitions," 2010). Supply chain has undergone a number of transitions over the past two decades. Since supply chain touches so many parts of the production and sales process, it is claimed by several different functions within a business. For example, SCM is often claimed as a part of operations since it is responsible for delivering the raw materials for production. It is also claimed by purchasing, since it is responsible for purchasing the raw materials for production. It has been claimed by marketing since it is also responsible for delivering finished goods to a customer (Caddy & Helou, 2007). Finally, it is claimed by information technology since it often involves a large ERP system or the supply chain is facilitated through information technology (Su & Yang, 2010). As a result, in academia as in industry, the knowledge of and management of the supply chain is appropriated by multiple functions. From an academic sense, this means that researchers in multiple areas (such as operations, purchasing, marketing, and information technology) have an interest in investigating various aspects of the supply chain and supply chain management.

As organizations have taken on such cost-cutting concepts as “lean manufacturing”, the role of supply chain management has become more important to firms (Caddy & Helou, 2007). Not only are costs important, but the overall operational efficiency of the supply chain has become a focal point. Therefore, both academics and practitioners alike have a significant interest in finding new ways to obtain competitive advantage (Walters, 2008).
In recent years, supply chain management has been a more recognizable term in business because it has been a focal point of company success. A poor supply chain adversely affects performance. Firms are beginning to realize the importance of supply chain management and are making their supply chain a priority (Wagner, Eggert, & Lindemann, 2010). As a result, companies are improving their supply chain processes to become more profitable and efficient (Griffith, 2010).

Every function of a business plays an integral part in the supply chain. Business functions such as procurement/logistics, marketing, operations, and IT all contribute to the transformation and flow of goods throughout a company. Each function has the opportunity to add value and help a company save money if they operate at an optimal level (Walters, 2008). The identification of supply chain management processes and process links have drawn attention from both researchers and businesses. A more flexible or responsive supply chain can provide a company with significant advantages in terms of production and operations. This can also allow a company to outperform the competition through quicker reactions to market demand and changes in preferences. Companies are constantly scanning their supply chain in order to identify ways to achieve a cost savings and ultimately gain a competitive advantage (Walters, 2008).

The interaction of functions is evident with the emergence of enterprise resource planning (ERP) systems such as SAP and Oracle (Akkermans, Bogerd, Yücesan, & van Wassenhove, 2003). Companies are relying on these software programs to help coordinate activities across all business functions to maintain an efficient and effective supply chain (Su & Yang, 2010).
Thus, as the role of supply chain management has expanded, its definition has also become somewhat more complex. The Council of Supply Chain Management Professionals (CSCMP) has defined supply chain management as:

“Supply chain management encompasses the planning and management of all activities involved in sourcing and procurement, conversion, and all logistics management activities. Importantly, it also includes coordination and collaboration with channel partners, which can be suppliers, intermediaries, third party service providers, and customers. In essence, supply chain management integrates supply and demand management within and across companies ("CSCMP supply chain management definitions," 2010).”

This definition shows the significance of supply chain management and how every aspect of the business needs to work together to be efficient. The definition also encompasses the immense impact the supply chain has on a business.

This paper uses an interdisciplinary model for supply chain management research to develop a research agenda for supply chain management, specifically as it relates to procurement. Initially presented at the annual Decision Sciences Institute Conference in November 2001 (Parente, Ishman, Roth, & Lee) and also referenced in a management interdisciplinary model research agenda developed in 2005 (Parente, Ishman, Roth, & Lee, 2008). A prior study (Parente, et al., 2008) used the same model to develop a research agenda for marketing as it relates to the supply chain.

In this study, I have reviewed key purchasing journals to identify articles on SCM. I have also reviewed marketing, operations, and information technology journals for articles on SCM. I then categorized the articles and related them to the set of articles in the other discipline’s journals. Simply, I used the interdisciplinary model to develop two mappings that would lead to a research agenda:
1. SCM topics currently being researched in Purchasing journals and the other discipline journals (Purchasing:Operations; Purchasing:Marketing; Purchasing:Information Technology). These topics can be the basis for collaboration between the discipline pairs.

2. SCM topics in the other discipline’s journals that are mapped to Purchasing but are not being researched in Purchasing journals (SCM topics in Operations journals that are not in Purchasing journals but are related to Purchasing concepts; SCM topics in Marketing journals that are not in Purchasing journals but are related to Purchasing topics; SCM topics in Information Technology journals that are not in Purchasing journals but are related to Purchasing topics). These topics can form the basis of a research agenda for Purchasing on SCM. These topics may be pursued as collaborative projects with researchers from the other disciplines.

In the next section, there is a general description of the model and research design in the interdisciplinary model of supply chain management research section. The model design section identifies the four functional components of the model along with the definition of supply chain management from each individual perspective. Finally, results from the academic journals and research agenda are presented and examined. These articles were published from January 2005 to December 2008. Each of these procurement articles was then mapped to one of the three areas along with the SCM articles in each of these articles back to procurement. The functional foundation of the model section goes on to discuss the six intersections or dyads between the functions.
These intersections allowed for the identification of overlap in topics along with missing links between functions (Parente, et al., 2008).

Each of these three intersections presents the key question in this research: is the intersection extraneous or should there be collaboration between the functional disciplines? Areas that call for collaboration help establish a specific interdisciplinary agenda for SCM research in procurement. The conclusion also addresses limitations and implementation of the research.

*An interdisciplinary model of supply chain management research*

![Figure 1: Interdisciplinary Model of Supply Chain Research](image)

The interdisciplinary model of supply chain research is shown in Figure 1 (Parente, et al., 2008). In this study, the supply chain linkages were formed without regard to intra and inter-organizational components. This was done because linkages in the supply chain can be found from the raw material stage to the after-sales service stage and supply chain management may take on inter-organizational, intra, and inter-functional forms. Identifying linkages in this fashion allowed for the focus on the interdisciplinary opportunities for research in supply chain management. This was very
complex due to the depth and variety of the topics related to the supply chain in a selection of very different types of businesses.

The procurement function of a business has become a vital part of any organizational operation. Procurement, when done effectively, can positively affect the bottom line and have a significant impact on the success or failure of a business. Procurement is an area where there can be significant cost savings which is essential in a tough economy. Successful procurement execution can lead to an increase in margin, more project bids accepted, and building relationships with suppliers (Castro-Lacouture, Medaglia, & Skibniewski, 2007). This is a function that does not always jump out as a critical part of a business. Further research in the procurement area allows businesses to discover initiatives that are taking place in other functions that are actually related to the purchasing function. Also, this allows procurement to see initiatives which are taking place in the purchasing function that need to be collaborated with another function. This research uncovers a different perspective which will allow for conclusions to be made on the missing gaps between business functions.

The research questions for this study are:

- Does purchasing belong in SCM research? Does procurement play a role in the supply chain that is supported by the articles in procurement journals? For example, do the journals relate to the supply chain and relevant procurement areas?
- What role does the area of procurement research have in relation to other functional areas? Is there any collaboration between procurement research and
other functional areas? What role does this collaboration play, if any?

Investigation of these articles will be able to answer these questions

- Will this research be beneficial? Will the interdisciplinary research provide significant information? While this research is narrowly focused in procurement and the supply chain, narrowly focused research has proven to be beneficial in the past in other areas. Is the topic of supply chain research any different?

If supply chain research is proven to be interdisciplinary a new set of questions arises from the research.

- What are the intersections between procurement and the other functions? The intersections and perspectives of each of the four functions identified need to have topics of common interest in order to be mapped to each other.

- What is the content of each intersection? Between procurement/logistics and operations? Between procurement/logistics and marketing? Between procurement/logistics and IT? Do these present common areas of interest or are there none?

- Is there an opportunity to establish a collaborative research agenda from this research? Does the manner in which the research is being done provide opportunities for collaborative research to take place? Are there additional topics from outside of the procurement function which call to be researched from the procurement perspective?
**Model description**

The model in Figure 1 was utilized as the basis of this research. The specific area of interest in this article is identified in Figure 2 (Parente, et al., 2008). The point of intersection in the shaded area will identify topics that are currently being collaboratively researched in SCM. The topics that will be in the un-shaded areas show us where there is room for collaboration between the functions and is the focus of interest for this article.

**Figure 2: Intersection Example**

The full model in Figure 3 shows the model of linkages with procurement/logistics highlighted. For the purposes of this article, I concentrated on the intersection of topics between procurement/logistics and three other functions: marketing, operations, and IT. These four functions, pictured at the corner points of Figure 3, create six dyadic relationships which are all interconnections. This interconnectedness represents how every function ideally interconnects and works with one another in the supply chain.

Previous research has been done linking marketing and supply chain management fields of study with the same model, but further study including different functional
Figure 3: Model of linkages with procurement

To summarize the model, the contents of the three shaded boxes with thick black lines in Figure 3 are the basis for the potential interdisciplinary agenda between procurement and supply chain research. The un-shaded boxes represent an opportunity for other research to be completed with procurement and SCM with different outlets with their field of study. All six boxes represent opportunities for future collaboration. This
model will be used to identify the research topics that could benefit from collaborative supply chain research.

**Functional foundation of the model**

This section explores each of the four functions in the interdisciplinary model: purchasing/logistics, information technology, operations, and marketing. Each function is an integral part of the supply chain. Collaboration between and among these activities allows a company to operate at an optimal level of efficiency.

The function of logistics/purchasing focuses on the procurement of raw goods or parts for manufacturing or assembling a final product ("What is logistics?," 2010). The marketing function includes promoting and selling products to customers. During the transformation process of raw materials into finished products, operations plays an integral part in how the product is manufactured. The information technology function supports the other functions by providing electronic means of sending and sharing (Parks, 2003).

Today, we conduct business in a global marketplace (Griffith, 2010). A global marketplace expands the introduction definition of supply chain management from CSCMP to many different countries all over the world. Businesses now encounter new challenges of operating in this global marketplace in many aspects such as communication, government regulations, information sharing, and market preferences (Griffith, 2010).

The purchasing/logistics function is involved with buying goods and services ranging from raw materials to office supplies through the distribution and delivery of goods ("What is logistics?," 2010). This function is an area where significant cost
savings can be achieved. Recently there has been a greater emphasis on sustainability which can be achieved here through reducing waste and being more eco-friendly. Technology has become more advanced and the evolution of electronic business services and processes has been cutting edge in this function. Allowing customers to review, track, and instantaneously change orders via the internet has made a significant impact on the way companies conduct business (Gunasekaran & Ngai, 2004).

IT has really transformed the supply chain in a variety of different ways (Parks, 2003). The speed and accuracy of information that can now be received allows for all aspects of the business to make more informed decisions. With the utilization of ERP systems, each function is given the information needed to operate efficiently and effectively (Akkermans, et al., 2003). The information flow and informed decisions businesses can now make using this data has proven to be essential for long term success. The internet is an essential tool for success in today’s business environment, but only if it is done right (Parks, 2003). Having the right IT functions on your website is essential and in turn is collaborative with the respective function of the business. Whether it is strategically marketing your business online or having the necessary online capabilities, the internet has become a focus with many businesses operating entirely online (Zhao, Xia, Shaw, & Subramaniam, 2009).

The operations function is involved primarily with the transformation process in a business ("What is operations?," 2010). Operations can be expanded to the efficiency and procedures as well. This function has been the focal point of cost cutting techniques the past few years through reduction in lead time and inventory, along with improved forecasting ("What is operations?," 2010).
Marketing is involved throughout the supply chain process managing customers both before and after the product sales ("Market and price," 2010). Effective advertising for businesses is essential in order to inform customers about their products/services. If a customer does not know about a product or service, it is impossible to sell that product or service to them. Marketing initiatives that result in positive new releases provide selling points and businesses can take advantage of the positive effects of eco-friendly initiatives, awards, or charity (Parks, 2003).

All of these functions work together from start to finish. This is portrayed in Porter’s value chain model shown in Figure 4. Information is exchanged between all of these areas in order to create additional value, thus profit margin ("The value chain," 2010). These linkages allow a company to run efficiently and effectively. A call for greater collaboration between these functions in their initiatives creates a synergy that develops into a competitive advantage.

Figure 4

*Porter’s Model*

**Primary Value Chain Activities**

- Inbound Logistics
- Operations
- Outbound Logistics
- Marketing & Sales
- Service

**Linkages**

In order to identify the linkages between functions, the following steps were taken (Parente et al, 2008). Supply chain management topics were identified from the most relevant and most read journals for each respective function. The journal search was
completed for purchasing/logistics, IT, operations, and marketing. Journals were selected in coordination with a previous study, *Marketing and supply chain management: A collaborative research agenda* (Parente, et al., 2008). Additional journals were selected based on high ranking and relevance. Some journals were dismissed on the basis that they did not provide significant research results. The resulting journals researched contained top cutting edge topics which were used for research.

The search identified articles that used “supply chain management” (SCM) in the journal article title, abstract, or keyword. Any articles that were either introductory or less than five pages were excluded. These were excluded because they did not provide enough information in their claims for this research. All articles meeting the above criteria were then mapped to the marketing, IT, or operations functions.

**Table I: Procurement journals selected for review**

<table>
<thead>
<tr>
<th>Journals Selected</th>
<th>Articles Reviewed</th>
<th>Total of Articles on SCM</th>
<th>Articles on SCM (%)</th>
<th>Articles mapped to operations</th>
<th>Articles mapped to IT</th>
<th>Articles mapped to marketing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supply Chain Management (SCM)</td>
<td>207</td>
<td>176</td>
<td>85.02%</td>
<td>63</td>
<td>42</td>
<td>71</td>
</tr>
<tr>
<td>Supply Chain Management Review (SCMR)</td>
<td>456</td>
<td>60</td>
<td>13.16%</td>
<td>30</td>
<td>12</td>
<td>19</td>
</tr>
<tr>
<td>Journal of Purchasing and Supply Management (JPSM)</td>
<td>134</td>
<td>13</td>
<td>9.70%</td>
<td>5</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Journal of Business Logistics (JBL)</td>
<td>129</td>
<td>77</td>
<td>59.69%</td>
<td>32</td>
<td>11</td>
<td>33</td>
</tr>
<tr>
<td>International Journal of Physical Distribution and Logistics Management (IJPDLM)</td>
<td>192</td>
<td>156</td>
<td>81.25%</td>
<td>62</td>
<td>26</td>
<td>68</td>
</tr>
<tr>
<td>International Journal of Logistics Management (IJLM)</td>
<td>75</td>
<td>70</td>
<td>93.33%</td>
<td>30</td>
<td>14</td>
<td>26</td>
</tr>
<tr>
<td>Transportation Journal (TJ)</td>
<td>118</td>
<td>21</td>
<td>17.80%</td>
<td>13</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Transportation Research, Part E (TR-E)</td>
<td>211</td>
<td>10</td>
<td>4.74%</td>
<td>2</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>1522</strong></td>
<td><strong>583</strong></td>
<td><strong>38.30%</strong></td>
<td><strong>237</strong></td>
<td><strong>112</strong></td>
<td><strong>234</strong></td>
</tr>
</tbody>
</table>

When mapping the articles, the following questions were addressed:

- This article resides in a procurement/logistics journal, but which other function is this topic addressing? Would these two functions benefit from collaboration?
• What function would benefit from reading this? Is marketing/IT/operations aware that procurement/logistics is currently doing this? As a manager of one of these other functions, would there be interest in further exploration of this topic?

Table I has the results of the search and mapping. This table shows the article percentages related to SCM in each journal and the number of procurement/logistics journals which were mapped to the corresponding disciplines. After mapping each of the procurement/logistics article to each of the disciplines, the main topic in each article was identified. Overall, there were 583 mapped journals relating to SCM that met the search criteria. From this table, it is shown that there were four primary articles relating to supply chain management. These primary journals were: SCM, JBL, IJPDL, and IJLM. When these journals were mapped to each of the other disciplines, the operations or marketing disciplines were found as the main topic twice as much as IT.

Table II shows the topics presented in the reviewed articles and the function the topic was mapped to. Articles from operations, IT, and marketing journals were then categorized using the same process.
Table II: SCM articles in procurement/logistics journals

<table>
<thead>
<tr>
<th>Mapped To: Topic</th>
<th>Number of articles relating to this topic</th>
<th>Mapped To: Topic</th>
<th>Number of articles relating to this topic</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations</td>
<td>32 IT</td>
<td>Technology Planning</td>
<td>20</td>
</tr>
<tr>
<td>Inventory Management</td>
<td>17</td>
<td>Information Sharing</td>
<td>16</td>
</tr>
<tr>
<td>Outsourcing</td>
<td>17</td>
<td>Electronic Commerce</td>
<td>15</td>
</tr>
<tr>
<td>Risk Management</td>
<td>17</td>
<td>RFID</td>
<td>12</td>
</tr>
<tr>
<td>Distribution Management</td>
<td>16</td>
<td>Information System Utilization</td>
<td>9</td>
</tr>
<tr>
<td>Globalization</td>
<td>16</td>
<td>Supply Networks</td>
<td>9</td>
</tr>
<tr>
<td>Demand Management</td>
<td>15</td>
<td>Integration</td>
<td>8</td>
</tr>
<tr>
<td>Integration</td>
<td>13</td>
<td>B2B Commerce</td>
<td>7</td>
</tr>
<tr>
<td>Managerial Skills</td>
<td>11</td>
<td>Implementation</td>
<td>6</td>
</tr>
<tr>
<td>Benchmarking</td>
<td>9</td>
<td>Optimization</td>
<td>5</td>
</tr>
<tr>
<td>Competitive Advantage</td>
<td>9</td>
<td>Knowledge Management</td>
<td>3</td>
</tr>
<tr>
<td>Inventory Control</td>
<td>9</td>
<td>Electronic Data Interchange</td>
<td>2</td>
</tr>
<tr>
<td>Lean Manufacturing</td>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Forecasting</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Organizational Behavior</td>
<td>6 Marketing</td>
<td>Vendor Supplier Relationships</td>
<td>46</td>
</tr>
<tr>
<td>Project Management</td>
<td>6</td>
<td>Supply Networks</td>
<td>27</td>
</tr>
<tr>
<td>Freight Forwarding</td>
<td>5</td>
<td>Market Orientation</td>
<td>26</td>
</tr>
<tr>
<td>Implementation</td>
<td>5</td>
<td>Customer Focus</td>
<td>22</td>
</tr>
<tr>
<td>International Trade</td>
<td>5</td>
<td>Sustainability Management</td>
<td>15</td>
</tr>
<tr>
<td>Production Planning</td>
<td>5</td>
<td>Organizational Behavior</td>
<td>9</td>
</tr>
<tr>
<td>Quality Emphasis</td>
<td>5</td>
<td>Product Development</td>
<td>9</td>
</tr>
<tr>
<td>Decision Making</td>
<td>4</td>
<td>Relationship Marketing</td>
<td>9</td>
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<tr>
<td>Product Design</td>
<td>4</td>
<td>Globalization</td>
<td>8</td>
</tr>
<tr>
<td>Emergency Preparedness</td>
<td>3</td>
<td>Reverse Logistics</td>
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<td>Regulation</td>
<td>3</td>
<td>Quality Emphasis</td>
<td>7</td>
</tr>
<tr>
<td>Employee Turnover</td>
<td>2</td>
<td>Risk Management</td>
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<tr>
<td>Safety Management</td>
<td>2</td>
<td>Integration</td>
<td>6</td>
</tr>
<tr>
<td>Supply Networks</td>
<td>2</td>
<td>Consumer Behavior</td>
<td>5</td>
</tr>
<tr>
<td>Business Ethics</td>
<td>1</td>
<td>Implementation</td>
<td>5</td>
</tr>
<tr>
<td>Collaboration</td>
<td>1</td>
<td>Outsourcing</td>
<td>5</td>
</tr>
<tr>
<td>Financial Performance</td>
<td>1</td>
<td>Organizational Learning</td>
<td>4</td>
</tr>
<tr>
<td>Transshipment</td>
<td>1</td>
<td>Pricing Policies</td>
<td>4</td>
</tr>
<tr>
<td>Total</td>
<td>241</td>
<td>Managerial Skills</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Product Returns</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Collaboration</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Decision Making</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Profitability</td>
<td>1</td>
</tr>
<tr>
<td>Total</td>
<td>229</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: Researched articles located in Appendix I
Table III: Journals selected for review in IT, marketing, and operations

<table>
<thead>
<tr>
<th>Journals selected (abbreviation)</th>
<th>Articles Reviewed</th>
<th>Total of Articles on SCM</th>
<th>Articles on SCM (%)</th>
<th>Mapped to Purch/Log</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operations Journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Journal of Operations &amp; Production Management (IOPM)</td>
<td>281</td>
<td>169</td>
<td>60.14%</td>
<td>62</td>
</tr>
<tr>
<td>Journal of Operations Management (JOM)</td>
<td>288</td>
<td>60</td>
<td>20.83%</td>
<td>23</td>
</tr>
<tr>
<td>Production Operations Management (POM)</td>
<td>248</td>
<td>110</td>
<td>44.35%</td>
<td>28</td>
</tr>
<tr>
<td>IEEE Transactions on Engineering Management (IEEE)</td>
<td>183</td>
<td>10</td>
<td>5.46%</td>
<td>3</td>
</tr>
<tr>
<td>Management Science (MS)</td>
<td>668</td>
<td>74</td>
<td>11.08%</td>
<td>43</td>
</tr>
<tr>
<td>Manufacturing Services Operations Management (MSOM)</td>
<td>172</td>
<td>46</td>
<td>26.74%</td>
<td>21</td>
</tr>
<tr>
<td>Operations Journals Total</td>
<td>1840</td>
<td>469</td>
<td>25.49%</td>
<td>180</td>
</tr>
<tr>
<td>IT Journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Communications of the ACM (CACM)</td>
<td>1022</td>
<td>25</td>
<td>2.45%</td>
<td>10</td>
</tr>
<tr>
<td>Decision Sciences (DS)</td>
<td>133</td>
<td>47</td>
<td>35.34%</td>
<td>19</td>
</tr>
<tr>
<td>Information Systems Management (ISM)</td>
<td>216</td>
<td>22</td>
<td>10.19%</td>
<td>6</td>
</tr>
<tr>
<td>Journal of Global Information Technology Management (JIGTM)</td>
<td>128</td>
<td>3</td>
<td>2.34%</td>
<td>0</td>
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<tr>
<td>MIS Quarterly (MISQ)</td>
<td>152</td>
<td>7</td>
<td>4.61%</td>
<td>2</td>
</tr>
<tr>
<td>IT Journals Total</td>
<td>1754</td>
<td>113</td>
<td>6.44%</td>
<td>43</td>
</tr>
<tr>
<td>Marketing Journals</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial Marketing Management (IMM)</td>
<td>335</td>
<td>23</td>
<td>6.87%</td>
<td>10</td>
</tr>
<tr>
<td>Journal of Marketing (JOM)</td>
<td>205</td>
<td>6</td>
<td>2.93%</td>
<td>3</td>
</tr>
<tr>
<td>Journal of Business and Industrial Marketing (JBIM)</td>
<td>204</td>
<td>49</td>
<td>24.02%</td>
<td>38</td>
</tr>
<tr>
<td>Academy of Marketing Science (AMS)</td>
<td>218</td>
<td>8</td>
<td>3.67%</td>
<td>6</td>
</tr>
<tr>
<td>Marketing Journals Total</td>
<td>962</td>
<td>86</td>
<td>8.94%</td>
<td>57</td>
</tr>
</tbody>
</table>

The categories related to procurement/logistics were identified by the topic addressed in each article. Table III identifies the article selection from each function: the number of articles related to SCM, and the number of articles that were mapped to the procurement/logistics function. When the identification and mapping processed were complete, a “matching up” technique was utilized to identify areas of intersection and
areas needed for collaboration. All topics found in the procurement/logistics journals were put into an excel sheet separated by the function mapped to.

Several observations can be taken from Table III. The operations function was linked to procurement three times as much as marketing journals and over four times as much as the IT journals. The operations journals contained supply chain articles roughly 25% of the time. This was over double the amount of time when compared to the marketing and IT journals. Researchers in the operations field are spending over twice the amount of time studying supply chain, making it possible to argue the “supply chain” as theirs.

Next, the topics identified in the operations, IT, and marketing journals were “matched up” against the topics found in the procurement/logistics journals. All topics that were identified in both journals were viewed as an intersection of topics. Figure 3 shows the model of linkages while Figure 2 shows a snapshot of one of the intersections as previously mentioned. The **Intersection of topics** shaded area is where these topics would reside. This means that there is a match for collaborative research for these topics. The topics identified are shown in Table IV.
<table>
<thead>
<tr>
<th>Dyad Functions</th>
<th>Topics</th>
<th>Dyad Functions</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>PUR/OPS</td>
<td>Benchmarking</td>
<td>PUR/IT</td>
<td>Business to business commerce</td>
</tr>
<tr>
<td></td>
<td>Business to business commerce</td>
<td></td>
<td>Competitive Advantage</td>
</tr>
<tr>
<td></td>
<td>Competitive Advantage</td>
<td></td>
<td>Electronic Commerce</td>
</tr>
<tr>
<td></td>
<td>Customer Focus</td>
<td></td>
<td>Electronic Data Interchange</td>
</tr>
<tr>
<td></td>
<td>Decision Making</td>
<td></td>
<td>Implementation</td>
</tr>
<tr>
<td></td>
<td>Demand Management</td>
<td></td>
<td>Information Sharing</td>
</tr>
<tr>
<td></td>
<td>Distribution Management</td>
<td></td>
<td>Integration</td>
</tr>
<tr>
<td></td>
<td>Electronic Commerce</td>
<td></td>
<td>Inventory Management</td>
</tr>
<tr>
<td></td>
<td>Globalization</td>
<td></td>
<td>Optimization</td>
</tr>
<tr>
<td></td>
<td>Implementation</td>
<td></td>
<td>Organizational Behavior</td>
</tr>
<tr>
<td></td>
<td>Integration</td>
<td></td>
<td>Outsourcing</td>
</tr>
<tr>
<td></td>
<td>Inventory Control</td>
<td></td>
<td>Pricing Policies</td>
</tr>
<tr>
<td></td>
<td>Inventory Management</td>
<td></td>
<td>Quality Emphasis</td>
</tr>
<tr>
<td></td>
<td>Managerial Skills</td>
<td></td>
<td>RFID</td>
</tr>
<tr>
<td></td>
<td>Organizational Behavior</td>
<td></td>
<td>Risk Management</td>
</tr>
<tr>
<td></td>
<td>Outsourcing</td>
<td></td>
<td>Technology Planning</td>
</tr>
<tr>
<td></td>
<td>Pricing Policies</td>
<td></td>
<td>Vendor Supplier Relationships</td>
</tr>
<tr>
<td></td>
<td>Production Planning</td>
<td>PUR/MKTG</td>
<td>Business to business commerce</td>
</tr>
<tr>
<td></td>
<td>Profitability</td>
<td></td>
<td>Collaboration</td>
</tr>
<tr>
<td></td>
<td>Quality Emphasis</td>
<td></td>
<td>Competitive Advantage</td>
</tr>
<tr>
<td></td>
<td>Regulation</td>
<td></td>
<td>Customer Focus</td>
</tr>
<tr>
<td></td>
<td>Risk Management</td>
<td></td>
<td>Electronic Commerce</td>
</tr>
<tr>
<td></td>
<td>Supply Networks</td>
<td></td>
<td>Integration</td>
</tr>
<tr>
<td></td>
<td>Transshipment</td>
<td></td>
<td>Organizational Behavior</td>
</tr>
<tr>
<td></td>
<td>Vendor Supplier Relationships</td>
<td></td>
<td>Pricing Policies</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Relationship Marketing</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Reverse Logistics</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Supply Networks</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Vendor Supplier Relationships</td>
</tr>
</tbody>
</table>

Table IV topics include topics that are currently researched from both perspectives; procurement/logistics and operations, procurement/logistics and IT, or procurement/logistics and marketing. The remaining topics resided in the white areas of Figure 2 and Figure 3 and are the focal point of the study. These topics are currently
researched by one function of the dyad, but not the other. Table V identifies the topics that are candidates for an interdisciplinary research agenda.

Table V topics include the following:

- These are topics currently researched from the purchasing/logistics perspective but relate to one of the other functions (operations, IT, or marketing) and these functions are not concurrently researching this topic
- These topics are currently researched from the Operations, IT, or Marketing perspective, the topic is related to procurement/logistics, but is not being researched by procurement/logistics areas

Table V: Research topic agendas for Procurement

<table>
<thead>
<tr>
<th>Function</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>OPS</td>
<td>Auctions</td>
</tr>
<tr>
<td></td>
<td>Electronic Procurement</td>
</tr>
<tr>
<td></td>
<td>SC Flexibility</td>
</tr>
<tr>
<td></td>
<td>Order Processing</td>
</tr>
<tr>
<td></td>
<td>Contracts</td>
</tr>
<tr>
<td></td>
<td>Customization</td>
</tr>
<tr>
<td>IT</td>
<td>SC Flexibility</td>
</tr>
<tr>
<td></td>
<td>Auctions</td>
</tr>
<tr>
<td></td>
<td>CRM</td>
</tr>
<tr>
<td>Marketing</td>
<td>Consumer Behavior</td>
</tr>
<tr>
<td></td>
<td>Distribution Channels</td>
</tr>
<tr>
<td></td>
<td>SC Flexibility</td>
</tr>
</tbody>
</table>

SCM procurement/logistics research agendas

The model provided many results showing both current collaborative research (shaded portion) and possibilities for future research (white portions). The collaborative research results in Table IV identified topics both functions are researching and working on currently. This is important because it identifies current trends and recognizes that research is being completed on these topics.
The model presented results for future research located in Table V. Table V identifies each function and the opportunities to look for potential collaboration between the functions and openings for further research. Research opportunities in SCM for each function highlighted here. For example, if you are a marketing researcher, you would include the topics listed currently being researched in procurement/logistics. In the research, there were articles in procurement journals addressing sustainability which were mapped to the marketing function. No articles published in the marketing journals addressed this topic, thus this topic (along with the others listed in Table V) would call for further research in regards to supply chain.

Summary

Utilizing the model in Figure 3, an interdisciplinary model of supply chain research including four disciplines was presented. The ultimate goal of this research was to identify a current and future collaborative research study of the disciplines in regards to supply chain research. The research began by asking the following questions:

- What is happening in SCM research? Are there opportunities here?
- How do these opportunities relate to different functions? How can these opportunities be explored/identified?

The model previously established allowed these questions to be answered by identifying these opportunities. The results are very promising. The topics that were identified reveal areas of opportunities for future researchers from different disciplines to collaborate on these topics.
The supply chain involves many different functions; this model provides a narrow focus for the linkages to four functions. The interdisciplinary approach is essential in supply chain management, where multiple functions work together in order for a company to run efficiently and effectively. Likewise, it would appear to benefit the SCM field for researchers from different functional areas to collaborate. If supply chain research is done with only a single perspective, there is room for many other factors to be ignored and the cohesiveness of a supply chain will be lost.

This approach to supply chain research allows for all activities across the supply chain to be considered and identifies gaps in the research agenda for future research and collaboration between the functions. The ability to see that issues do exist gives both managers and researchers a jump start in identifying a solution to these objectives.

Additional Conclusions

There are additional conclusions that can be found from this research when done in comparison with Parente’s Marketing and supply chain management: a collaborative research agenda article (Parente, et al., 2008).

- There were over five hundred more qualifying articles found using the same search process and using most of the same journals. Businesses have realized the importance of utilizing their supply chain and thus more research has gone into the supply chain field of study.

- There are still some of the same topics that call for collaboration between the functions as in 2002, but there are also many new areas presenting opportunities for further research. This tells us two things. The research method utilized by Dr. Parente in the previous article was successful in identifying areas for necessary
collaboration (Parente, et al., 2008). The results produced in this article do, in fact, present additional areas for further collaboration and research.

**Limitations and future research**

This research approach has several limitations. Public databases were used to achieve an automated extraction of articles which can be the source of many inconsistencies of results. All categories were double checked and done with consistency criteria for categorization, but they were all reviewed by one person. That being said, the whole research process was documented and cross-validated.

Language was another limitation. Different functions and journals use different keywords to identify topics. The language was interpreted from the function it originated from and taken in that context. This was a crucial task in mapping the articles to a topic and function.

Each article was mapped to one of the other three functions it was related to. The model limited the mapping to the four functions in the model and in some cases the article interrelated to more than just one topic. The function to which those articles were most closely related is where the article was mapped to.

There are many areas for future research, such as this same type of approach in relation to the other three functions (operations, IT, and marketing). Research in expanding this model further with the separation of logistics and procurement provides a myriad of more research opportunities as well.
References


### Appendix 1

<table>
<thead>
<tr>
<th>Mapped To:</th>
<th>Topic</th>
<th>Research Articles</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Decision Making</td>
<td>Alan, Smart, and Dudas Andreas. (2007); Amit, Sachan, and Datta Subhash. (2005); Brian, J. Gibson, M. Rutner Stephen, and B. Manrodt Karl. (2005); Craig, R. Carter, Kaufmann Lutz, and Michel Alex. (2007)</td>
</tr>
<tr>
<td>------------------------</td>
<td>----------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Authors</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Category</td>
<td>Authors/References</td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Technology Planning</td>
<td>Marketing</td>
<td></td>
</tr>
<tr>
<td>---------------------</td>
<td>-----------</td>
<td></td>
</tr>
<tr>
<td>Area</td>
<td>Authors</td>
<td></td>
</tr>
<tr>
<td>---------------------------</td>
<td>-------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>Profitibility</td>
<td>Dave, N., E. M. Patricia, et al. (2005)</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td></td>
</tr>
</tbody>
</table>
Appendix II


the supply chain. Supply Chain Management, 11(2), 140.


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global textile and apparel supply chains. *International Journal of Physical
Distribution & Logistics Management, 35*(7/8), 503.

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its relationship to buyers' quality management. *Supply Chain Management, 11*(2),
148.

supply chain: Exemplars and implications from the aerospace industry.

industry to the new container security initiatives. *Transportation Journal, 45*(1),
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Academic Vita

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Cranberry Township, PA 16066
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Email: jrp5082@psu.edu

Current Research

Research is being conducted in the supply chain management field of study in relation to a collaborative agenda of interdisciplinary functions. The focus of the paper is on the procurement/logistics functions using an interdisciplinary model to identify potential opportunities in the procurement/logistics, operations, information technology (IT), and marketing fields. The results of the research will provide overlapping research areas which are now being concurrently, but not necessarily collaboratively, investigated. This study identifies areas that called for collaboration between each function and the purchasing field.

Papers

ACADEMIC RESEARCH TODAY: ESTABLISHING A COLLABORATIVE RESEARCH AGENDA IN SUPPLY CHAIN MANAGEMENT BETWEEN PROCUREMENT, MARKETING, OPERATIONS, AND INFORMATION TECHNOLOGY (2010)

Profile

Honors scholar and dean’s list member with hands-on experience in Management Operations, Supply Chain, Finance, and SAP. Will graduate with honors in May 2010 from the Sam & Irene Black School of Business at Penn State University with a Major in Operations Management and Minor in Finance. Member of the Schreyer Honors College and Beta Gamma Sigma Honor Society. Demonstrated a record of success in various challenging internship assignments at Fortune 500 companies.

Areas of Expertise

- Supply Chain and Operations Management
- SAP software processes and end user experience
- Certification in SAP R/3 ECC 6.0
- Hands-on SAP courses in Sales Logistics, Procurement, Financials, and Supply Chain
Education

Penn State University, Erie PA

Major: Operations Management
Concentration in Supply Chain Management
Expected Graduation May 2010

Minor: Finance
Deans List 7 semesters

Member: Schreyer Honors College and Beta Gamma Sigma National Honors Society

Work Experience

Bayer Corporation, Pittsburgh PA  Supply Chain Internship
May 2009 – August 2009

Responsible for several different roles in Customer Service department including setup of a new SAP system website, customer service desk coverage over several different product groups, and call center coverage. Assisted with training and roll-out of an SAP upgrade implementation to ECC 6.0. Dealt with rush orders and customer deadlines during the conversion period before and after the SAP transition. Prepared excel reports for managers to help provide cost saving analysis in a tough economy. The position provided exposure to many stages of the supply chain operations with a Fortune 500 company while helping support operations during a critical time with the system upgrade.

Fedex Ground, Pittsburgh PA  Purchasing Department Internship
May 2008 – August 2008

Integrated as a full time member of the Corporate Purchasing Department as part of their internship program. Responsible for several projects to track fiscal year spend and consumption, electric and gas usage, and payment recording. Worked on a special project to provide purchasing data to load into a new procurement system being implemented by Advantage IQ. Assisted with data collection to support site relocations, site maintenance, and service expansion opportunities. Researched and recommended options for recycling as part of the Corporate Social Responsibility program. This position provided an opportunity to gain exposure to the overall purchasing operation of a Fortune 500 company while successfully contributing toward the departmental objectives.

Trace Services, Pittsburgh PA – Project Coordinator / Supervisor
May 2007- Sept 2007
Responsible for a special project to coordinate all activities for a meter reading contract for a major public utility. Developed scheduling process for a team of 8 employees that had to fulfill scheduled appointments to read inside gas meters. Tasks included scheduling appointments with customers, developing the schedule for the meter readers, entering results into the utility tracking system built using Alpha Five software, and handling customer service calls. Also served as afternoon shift supervisor to ensure that all employees and vehicles were checked in each evening and to secure the building and grounds.

Other Activities:

**President, SAP Student Interest Group, Penn State Behrend**
March 2007 – Present

Coordinate all activities to support the expansion of knowledge of the SAP ERP system for the group. Responsibilities include coordinating group activities, preparing and managing annual budget, managing the group Website, and scheduling special events or speakers.

**Secretary, Circle K International Community Service Organization, Penn State Behrend Chapter**
May 2008 – Present

Charter member of the Circle K. Responsibilities include coordinating group activities, recruit new members, and participating in community service projects in the Erie area.

References - *Available upon request.*