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The Impact of Aligning Marketing Strategies throughout the Supply Chain

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Abstract

The supply chain marketing construct is developed and a supply chain marketing performance model is proposed. The model incorporates supply chain marketing as the focal construct and supply chain performance and organizational performance as consequences. New measurement scales for supply chain marketing and supply chain performance are developed and assessed. Using data from a sample collected in collaboration with APICS, the model is assessed following a structural equation methodology. Findings indicate that alignment of the marketing strategies of the partners throughout the supply chain result in improved supply chain performance, which leads to improved organizational performance of each supply chain partner. Integration of supply chain marketing strategies does not directly impact organization performance.
1 Introduction

Supply chains are value chains that extend from supplier's supplier to ultimate consumer. Supply chain management requires integration and coordination of business processes throughout the supply chain for the purpose of satisfying and responding to changes in consumer demand (Lambert and Cooper 2000). The business processes that must necessarily be integrated and coordinated include: purchasing, manufacturing, marketing, logistics, and information processes.

Heizer and Render (2006) identify the key to successful supply chain management as the ability to develop long-term, strategic relationships with supply chain partners. The quality of the supply chain relationships directly impacts the performance of the supply chain (Fynes et al. 2004). Effective supply chain management maximizes value to the ultimate customers of the supply chain in terms of both satisfaction with the product and/or services and a relatively low total cost of the product and/or service.

Integration and coordination of marketing processes throughout the supply chain is the focus here. Flint (2004) argues that the superior marketing strategies of the future will necessarily be those that are more fully integrated across the supply chain competing against supply chains that are less well integrated. The ability to integrate and coordinate becomes paramount in satisfying the demands of the ultimate customers of the supply chain. Successful supply chains are customer focused, requiring not only that each of the individual firms within the supply chain exhibit a market orientation but that the marketing strategies of the individual firms be integrated and coordinated such that the supply chain, as an entity, exhibits a market orientation (Jüttner et al. 2007; Gundlach et al. 2006; Min and Mentzer 2000). Gundlach et al.
(2006) argue that the integration and coordination of marketing strategies across the supply chain offers “continued opportunity” for cross-disciplinary research.

Generally, we propose that alignment of marketing strategies by the partners throughout the supply chain will result in improved supply chain performance, which will, in turn, positively impact the organizational performance of each of the supply chain partners. We define and describe the supply chain marketing construct and recommend a multi-item scale for measurement of the construct. A new scale for the measurement of supply chain performance is also recommended. This multi-item scale focuses on the satisfaction of the ultimate customers of the supply chain rather than the individual organization’s immediate customers. Following a pre-test with a small sample of supply chain managers, a sample of APICS members with knowledge of their organizations’ supply chain management initiatives provided data necessary to further assess supply chain marketing within a performance model with supply chain marketing as antecedent to supply chain and organizational performance. The study scales are carefully assessed for validity and reliability and the study hypotheses are tested within the context of the supply chain marketing model following a structural equation modeling approach.

2 Literature review and hypotheses

Manufacturing organizations have generally adopted internal strategies that have led to the ability to produce relatively high quality and relatively low cost products. It is difficult to develop additional competitive advantage through such internal approaches. With competition now at the supply chain level, competitive advantage comes from the ability of supply chain partners to coordinate and integrate strategies aimed at satisfying the ultimate customers of the supply chain at a relatively low total cost. Supply chains capable of implementing and executing an integrated and coordinated marketing strategy at the supply chain level focused on the
ultimate customers of the supply chain will gain competitive advantage at the supply chain level (Min and Mentzer 2000). Such competitive advantage must at some point, however, result in improved organizational performance for each of the partners within the supply chain. Manufacturing managers are ultimately held directly accountable for the performance of their organizations, not the supply chains in which their organizations participate. Why then, should manufacturing managers concern themselves with making decisions that may support the supply chain but, at least in the short-run, do not seem to directly impact the performance of their organizations? We contend that, in this era of competition at the supply chain level, managers must globalize to localize. In short they must do what’s best for the supply chain first and hope that such decisions will ultimately lead to improved organizational performance.

We propose a supply chain marketing performance model with supply chain marketing as antecedent to supply chain performance and supply chain performance as antecedent to organizational performance. The model is displayed in Figure 1. Please note that the links from supply chain marketing to organizational performance are shown but hypothesized as non-significant.

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Insert Figure 1 about here
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2.1 Theoretical foundation

Min and Mentzer (2000) argue that adoption of a market orientation at the supply chain level is pivotal to the overall success of the supply chain. A market orientation at the supply chain level depends upon the partnering firms’ abilities to develop inter-firm relationships that facilitate information exchange and communication related to the changing demands of the ultimate customers of the supply chain. Relational exchange theory (Griffith et al. 2006; Min and
Mentzer 2000; Kaufman and Stern 1988; Macneil 1980) and the customer focused view of the firm (Kohli and Jaworski 1990), therefore, serve as the theoretical underpinnings of this study. To satisfy the ultimate customers of the supply chain, the partnering firms must adopt and coordinate a market orientation at the supply chain level and execute that market orientation through strong, long-term relationships.

2.2 Supply chain marketing

Supply chain marketing is defined as the alignment of the marketing strategies of supply chain partners throughout the supply chain for the purpose of satisfying the supply chain’s ultimate customers and consumers at a relatively low total cost. The items in the newly developed supply chain marketing measurement scale are based upon the necessity to align, integrate, and coordinate marketing processes and the 1985, 2004, and 2007 definitions of marketing from the AMA (Keefe 2008). Successful supply chain marketing requires that marketing representatives of the organization collaborate with supply chain partners to: 1) plan and execute the conception of new products and services for ultimate customers, 2) plan and execute pricing, promotion, and distribution strategies for the sale of products and services to ultimate customers, 3) develop integrated processes that create value for ultimate customers, and 4) develop integrated processes that communicate the value developed to ultimate customers.

2.3 Supply chain performance

For purposes of this study, we take the extended view of the supply chain from “supplier’s supplier to ultimate customer” and incorporate within the newly developed measure of supply chain performance the ability to satisfy the ultimate customer in terms of both quality and cost. Although organizational managers are ultimately held accountable for organizational performance, organizational success depends upon the performance of the supply chains in
which the organization functions as a partner. Items in the supply chain performance
measurement scale focus on the ability of the supply chain to 1) deliver quality products and
services in precise quantities and at precise times, and 2) to minimize total cost of the products
and services to the ultimate customers of the supply chain.

2.4 Organizational performance

Measures of both the financial and marketing performance of organizations are incorporated in
this study. Financial performance focuses on the organization’s profitability and ability to
generate returns on investment and sales as compared to the industry average (Green and Inman
2005). Marketing performance focuses on the organization’s ability to generate sales as
compared to the industry average (Green and Inman 2005).

2.5 Hypotheses

As defined and described for purposes of this study, supply chain marketing requires that supply chain
partners align marketing strategies throughout the supply chain to meet the needs of the ultimate
customers of the supply chain. Such alignment is necessary to satisfy ultimate customers at a relatively
low total cost. This focus on the ultimate customer requires alignment of marketing strategies from end to
end of the supply chain. Supply chain marketers work with other supply chain partners to conceive of
new products and services and to execute integrated pricing, promotion, and distribution strategies that
build value for and communicate value to ultimate customers. Such compatible marketing strategies
should improve the performance of the overall supply chain. By definition, supply chain management is
the integration and coordination of business processes throughout the supply chain. As Lee (2004)
argues, supply chain performance depends upon the ability of the supply chain partners to align strategies.

HI: Supply chain marketing positively impacts supply chain performance.

Managers are charged with and held accountable for improving the performance of the
organizational entity for which they are directly responsible. Within a supply chain context,
however, organizational managers must adopt an external focus and must consider the impact of organizational strategies on supply chain partners. Attempts to directly optimize organizational performance may prove to have a detrimental impact on overall supply chain performance, thus damaging the competitive advantage of the chain (Chopra and Meindl 2004; Meredith and Shafer 2002). Chopra and Meindl (2004) argue that supply chain performance is optimized only when an ‘inter-organizational, inter-functional’ strategic approach is adopted by all partners operating within the supply chain. Optimization at the supply chain level maximizes the supply chain surplus available for sharing by all supply chain partners. Strategies that strengthen the competitive position of the supply chain serve to directly enhance supply chain performance which will, in time, positively impact performance at the organizational level for each supply chain partner. Although no empirically tested measure of overall supply chain performance was found, Green, Whitten, and Inman (2008b) surveyed manufactures and found that supply chain productivity, a construct similar to supply chain performance, positively impacted organizational performance.

\[ H2: \text{Supply chain performance positively impacts marketing performance of the organization.} \]

\[ H3: \text{Supply chain marketing positively impacts financial performance of the organization.} \]

Managers work to improve marketing performance in terms of sales and market share growth. Such marketing-related growth should impact financial performance through improved revenue numbers. Anderson et al. (1994) found that marketing performance, as measured by customer satisfaction, positively impacts financial performance, as measured by return on investment. Green et al. (2006) surveyed sales managers for manufacturing firms and found a positive link between marketing performance and financial performance. Schramm-Klein and Morschett (2006, p. 283), in their study of retailers, hypothesized that “marketing performance has a positive effect on company performance” and found that sales performance positively
influenced financial performance. Green et al. (2008a) surveyed plant and operations managers working for large U.S. manufacturers and found a strong positive relationship between the marketing performance of the organization and the financial performance of the organization. Martinez-Lorente et al. (2000) surveyed industrial companies with factories in Spain and found that market share growth and operational profits are positively related.

\textit{H4: Marketing performance of the organization positively impacts financial performance of the organization.}

Supply chain marketing has been defined and described as a supply chain strategy. While alignment of marketing strategies throughout the supply chain should impact organizational performance, the impact is not direct. The impact is indirect through supply chain performance. Marketing managers must concern themselves with strengthening the overall supply chain before improvements in organizational performance can be expected.

\textit{H5: Supply chain marketing does not directly impact financial performance of the organization.}

\textit{H6: Supply chain marketing does not directly impact the marketing performance of the organization.}

3 \hspace{1em} Methodology

3.1 \hspace{1em} Data collection process

Data were collected using an e-mail, Internet-based methodology from a sample of 117 managers with knowledge of their organizations supply chain activities. The survey instrument was developed by the authors and the data collection process was administered in three waves by APICS. The successive wave approach was used in an attempt to increase the response rate and to facilitate assessment of non-response bias as recommended by Lambert and Harrington (1990). Respondents have been in their current positions an average of 4.82 years and work for organizations with an average of 4,297 employees with average annual revenues of $18.3 billion. Respondents worked for a broad array of manufacturing, oil and gas, and logistics firms. Thirty-
three percent of the respondents are plant and operations managers, 19% are logistics managers, and 9.5% are supply chain managers.

[Insert discussion of response rate.]

To assess for non-response bias the means of the demographic variables, supply chain marketing, supply chain performance, and organizational performance items were compared across the three waves using ANOVA. No significant differences in means for the three waves were identified. Non-respondents have been found to resemble late respondents (Armstrong and Overton 1977). This finding of general equality across the means for the three successive waves indicates that non-response bias does not negatively impact the data set.

Common method bias may lead to inflated estimates of the relationships among variables, when data are collected from single respondents (Podsakoff and Organ, 1986). Podsakoff, MacKenzie, Lee, and Podsakoff (2003) recommend use of Harman's one-factor test to examine the potential bias when predictor and criterion variables cannot be obtained from different sources and the variables cannot be measured in different contexts. Substantial bias is indicated when either a single factor or one ‘general’ factor explains a majority of the total variance (Podsakoff et al. 2003). Results of the factor analysis identify four factors combining to account for 72% of the total variance. The first factor accounts for only 46% of the total variance. With a varimax rotation, the scale items loaded on the four factors as anticipated with the supply chain marketing, supply chain performance, marketing performance, and financial performance items loading on separate factors. Taking direction from Mossholder, Bennett, Kemery, and Wesolowski (1998), a single factor confirmatory factor analysis was also completed as an additional test for common method bias. This analysis with all items loading on
one factor does not fit the data well with a relative chi-square value of 10.96, an NNFI of .762, and a CFI of .782.

3.2 Construct measurement

The financial performance scale was originally developed and assessed by Claycomb et al. (1999), and the marketing performance scale was developed and assessed by Green and Inman (2005). These organizational performance scales appear in Table 1. The supply chain marketing and supply chain performance scales are newly developed for this study. For purposes of pre-testing the supply chain marketing and supply chain performance scales, 100 supply chain management professionals were identified in the Manufacturer’s News, Inc. database. Using a two wave mailing methodology, the supply chain management professionals were asked to complete a supply chain performance survey that included the supply chain marketing and performance scales. Twenty-one of the identified professionals responded. The supply chain marketing scale originally included 16 items and was subsequently trimmed, based on pre-test results, to the seven appearing in Table 1. The eight items were developed based on the work of Min and Mentzer (2000) and the 1988 and 2004 definitions of marketing developed by the American Marketing Association (Keefe 2008). The original 11 items in the supply chain performance scale survived the pre-test intact and are also displayed in Table 1.

Insert Table 1 about here

4 Results

4.1 Measurement scale assessment

Garver and Mentzer (1999) recommend computing Cronbach's coefficient alpha to assess scale reliability, with alpha values greater than or equal to 0.70 indicating sufficient reliability. Alpha scores for all of the measurement scales exceed the .70 level. Alpha values for supply chain
marketing, supply chain performance, marketing performance, and financial performance are .956, .926, .910, and .907, respectively. The study scales are sufficiently reliable.

Ahire et al. (1996) recommend assessing convergent validity using the normed-fit index (NFI) coefficient with values greater than 0.90 indicating strong validity. Garver and Mentzer (1999) recommend reviewing the magnitude of the parameter estimates for the individual measurement items to assess convergent validity. A strong condition of validity is indicated when the estimates are statistically significant and greater than or equal to .70. NFI values for the supply chain marketing (.98), supply chain performance (.93), and financial performance (1.00) scales exceed the .90 threshold. The marketing performance scale contains only three items precluding computation of NFI for the scale. All parameter estimates for the supply chain marketing scale are significant with values greater than .70 with the exception of item one which has a significant parameter estimate of .67. All parameter estimates for the supply chain performance scale are significant. Items one and 11 do not, however, meet the .70 criterion with values of .67 and .69, respectively. Parameter estimates for each of the individual items in the financial and marketing performance scales exceed the .70 threshold, with values of .79 or greater.

Discriminant validity was assessed using a chi-square difference test for each pair of scales under consideration, with a statistically significant difference in chi-squares indicating validity (Garver and Mentzer, 1999; Ahire et al., 1996; Gerbing and Anderson, 1988). All possible pairs of the study scales were subjected to chi-square difference tests with each pairing producing a statistically significant difference.

Predictive validity was assessed by testing whether the scales of interest correlate with other measures as expected (Ahire et al. 1996, Garver and Mentzer 1999). Taking direction from
Germain, Dröge, and Daugherty (1994), predictive validity is assessed by relating study variables with other variables for which there are no study hypotheses. The following additional data were collected: 1) degree to which the competitive focus of the organization is aligned with supply chain partners, 2) how well the overall supply chain performs, and 3) how well the organization performs. Supply chain marketing should be positively correlated with the degree of competitive focus alignment between organization and supply chain. The correlation coefficient for the relationship is .509 and is significant at the .01 level. Supply chain performance should be positively correlated with how well the overall supply chain performs. The correlation coefficient for the relationship is .363 and is significant at the .01 level. The financial performance and marketing performance variables should be positively correlated with how well the organization performs. The financial performance correlation is .552 and is significant the .01 level. The correlation with marketing performance is .364 and is significant at the .01 level. The study variables correlate as expected with the check variables indicating sufficient predictive validity.

Koufteros (1999) recommends that the individual scales be incorporated together in a measurement model and that this model be subjected to an additional confirmatory factor analysis and that relative chi-square, non-normed fit index (NNFI), and comparative fit index (CFI) values to assess fit when the sample size is relatively small. Relative chi-square values of less than 2.00 and NNFI and CFI values greater than .90 indicate reasonable fit (Koufteros, 1999). Results of the analysis indicate that the measurement model fits the data well with an NNFI of .927, and a CFI of .935. The relative chi-square of 2.17 is slightly higher that the recommended value of 2.00. Kline (1998) recommends relative chi-square values of less than
The individual measurement scales are considered sufficiently reliable and valid and the fit of the measurement model is considered sufficient to support further analysis.

4.2 Structural equation modeling results

Summary values for the study variables were computed by averaging across the items in the scales. Descriptive statistics and the correlation matrix for the summary variables are presented in Table 2. All correlation coefficients are positive and significant at the .01 level.

Insert Table 2 about here

Figure 2 illustrates the model with the structural equation modeling results. The relative chi-square (chi-square/degrees of freedom) value of 2.18 is slightly higher than the 2.00 level recommended by Koufteros (1999) but less than the 3.00 maximum recommended by Kline (1998). The NNFI (.927) and CFI (.935) exceed the .90 level recommended by Koufteros (1999).

Insert Figure 2 about here

Five of the six study hypotheses were supported by the standardized estimates and associated t-values. The relationship between supply chain marketing and supply chain performance (hypothesis 1) is positive and significant at the .01 level as hypothesized with an estimate of .61 and t-value of 5.62. The estimate of .47 for the relationship between supply chain performance and market performance of the organization (hypothesis 2) is positive and significant at the .01 level as hypothesized with an associated t-value of 3.84. Although hypothesized as positive, the relationship between supply chain performance and financial performance of the organization (hypothesis 3) is non-significant with an estimate of .12 and t-
value of 1.13. The relationship between marketing performance of the organization and financial performance of the organization (hypothesis 4) is positive and significant at the .01 level as hypothesized with an estimate of .68 and an associated \( t \)-value of 6.25. The relationship between supply chain marketing and financial performance of the organization (hypothesis 5) is hypothesized as non-significant. The non-significance is supported by a standardized estimate of -0.05 and an associated \( t \)-value of -0.48. The relationship between supply chain marketing and marketing performance of the organization (hypotheses 5) is also hypothesized to be non-significant. The standardized estimate of .14 and \( t \)-value of 10.17 support the claim of non-significance.

5 Conclusions

Supply chain marketing positively impacts supply chain performance which, in turn, positively impacts the marketing performance of the organization. Improved marketing performance of the organization leads to improved financial performance of the organization. Supply chain performance does not directly impact financial performance of the organization as expected, however. The impact of supply chain performance on financial performance is indirect through marketing performance. Supply chain marketing does not directly impact either of the organizational performance measures. Instead, the impact of supply chain marketing on organizational performance is indirect through supply chain performance.

Competitive advantage at the supply chain level depends upon the chain’s ability to focus on and respond to changes in customer demands. Not only must the individual firms adopt a market orientation but the firms must build relationships with partners that focus the entire supply chain on satisfaction of the ultimate customer at a relatively low total supply chain cost. Based on the results presented in this study, we recommend that marketing managers working
for the partnering firms within the supply chain collectively work to integrate and coordinate the supply chain strategies of their individual firms to focus on the ultimate customers of the supply chain. In effect, we recommend that they craft a “supply chain marketing strategy.” Such a strategy will not directly yield improvements in the marketing and financial performance of the individual firms. The relationship between supply chain marketing and organization performance is mediated by supply chain performance. Marketing managers must, therefore, “globalize” to localize in this era of hyper-competition between supply chains.
References


## Table 1
### Measurement Scales

**Supply-Chain-Marketing (Alpha = .956)**

*Please indicate the extent to which you agree with each statement (1 = strongly disagree, 7 = strongly agree).*

1. This organization and its supply chain partners have compatible marketing philosophies and work together to satisfy ultimate customers at a profit.

2. The marketing representatives of this organization work with supply chain partners to plan and execute the conception of new products and services for the ultimate customers of the supply chain.

3. The marketing representatives of this organization work with supply chain partners to plan and execute a pricing strategy for the sale of products and services to the ultimate customers of the supply chain.

4. The marketing representatives of this organization work with supply chain partners to plan and execute a promotion strategy for the sale of products and services to the ultimate customers of the supply chain.

5. The marketing representatives of this organization work with supply chain partners to plan and execute a distribution strategy for the sale of products and services to the ultimate customers of the supply chain.

6. The marketing representatives of this organization collaborate with supply chain partners to develop integrated processes that create value for the ultimate customers of the supply chain.

7. The marketing representatives of this organization collaborate with supply chain partners to develop integrated processes that communicate the value developed for the ultimate customers of the supply chain to those customers.

**Supply Chain Performance (Alpha = .926)**

*Please indicate the extent to which you agree with each statement as the statement relates to your organization's primary supply chain (1 = strongly disagree, 7 = strongly agree).*

1. This organization’s primary supply chain has the ability to deliver zero-defect products to final customers.

2. This organization’s primary supply chain has the ability to deliver value-added services to final customers.

3. This organization’s primary supply chain has the ability to eliminate late, damaged and incomplete orders to final customers.

4. This organization’s primary supply chain has the ability to quickly respond to and solve problems of the final customers.

5. This organization’s primary supply chain has the ability to deliver products precisely on-time to final customers.

6. This organization’s primary supply chain has the ability to deliver precise quantities to final customers.

7. This organization’s primary supply chain has the ability to deliver shipments of variable size on a frequent basis to final customers.

8. This organization’s primary supply chain has the ability to deliver small lot sizes and shipping case sizes to final customers.

9. This organization’s primary supply chain has the ability to minimize total product cost to final customers.

10. This organization’s primary supply chain has the ability to minimize all types of waste throughout the supply chain.

11. This organization’s primary supply chain has the ability to minimize channel safety stock throughout the supply chain.

**Organizational Performance**

*Please rate your organization's performance in each of the following areas as compared to the industry average (1 = well below industry average, 7 = well above industry average).*

**Financial Performance (Alpha = .907)**

1. Average return on investment.
2. Average profit.
3. Profit growth.
4. Average return on sales.

Marketing Performance (Alpha = .910)
5. Average market share growth.
6. Average sales volume growth.
7. Average sales (in dollars) growth.
Table 2
Descriptive Statistics and Correlations for Summary Variables

A. Descriptive Statistics

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<thead>
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<th>Variables</th>
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<th>Std. Deviation</th>
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<td>Supply Chain Performance (SCP)</td>
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<td>Marketing Performance (MP)</td>
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</tr>
<tr>
<td>Financial Performance (FP)</td>
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<td>1.09</td>
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</table>

B. Correlations

<table>
<thead>
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<th>SCP</th>
<th>MP</th>
<th>FP</th>
</tr>
</thead>
<tbody>
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</tr>
<tr>
<td>Supply Chain Performance (SCP)</td>
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<tr>
<td>Marketing Performance (MP)</td>
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<tr>
<td>Financial Performance (FP)</td>
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<td>0.395**</td>
<td>0.610**</td>
<td>1</td>
</tr>
</tbody>
</table>

** Correlation is significant at the 0.01 level (2-tailed).
Figure 1
Theorized Supply Chain Marketing Performance Model with Hypotheses
Figure 2
Supply Chain Marketing Performance Model with Standardized Coefficients and (t-values)

Relative chi-square = 2.17; NNFI = .93; CFI = .94