A Comparative Analysis of Market Orientation in the Commercial Fish Processing Industries of Atlantic Canada and The New England States

Reginald Sheppard
University of New Brunswick

This paper provides a comparative analysis of market orientation in the New England States Commercial Fish Processing Sector to that of Atlantic Canada. Part I is an exploratory analysis of market orientation in the New England setting. Part II is concerned with the construction of a parsimonious seasonal market orientation model for the North-Eastern Atlantic Commercial Fish Processing Sector. Using structural equation modeling, the author provides an interpretable solution of market orientation in this broad industry setting. The paper concludes with a discussion of limitations on the research, and recommendations for future research initiatives.

INTRODUCTION

The commercial fisheries sector of the North Eastern Atlantic Coast, inclusive of Atlantic Canada and The New England States, has been one mired in perpetual crisis (Beaudin, 2001). As such, it is one of the most studied industry sectors, particularly in Canada. Not unlike any other primary industry sector, especially one subject to seasonal cycles and influences, the fishing industry of the North Eastern Atlantic Coast is influenced by many factors. Most notable of these is perhaps the large number of stakeholders and interest groups that are dependent on this sector for employment and economic stability. This is especially true at the community level where one is able to find the processing and harvesting infrastructure, as well as all of the various employees who work on both a seasonal and year-round rotation.

Many initiatives have been undertaken to address the issues in this sector. A review of such finds that there have been many studies, mostly government sanctioned, all whom have concluded that this industry sector is a fragmented one. Most notable of these studies are the Royal Commissions of Kirby (1982) and Cashin (1993), as well that of Beaudin (2001) and Pinfold (2007). All of these, and similar reports, have done a satisfactory job of identifying the major issues. Some of these include, but are not necessarily limited to – pronounced resource cycles, changes in the international demand for seafood products, fragmented and geographically scattered production capacities, aged technology, limited throughput of raw materials, joint ownership of raw materials, shared jurisdictions, the inherent traditionalism of coastal regions, and a somewhat heavy dependence on "government" for assistance. In summary, a volatile operational and market setting.

While the motivation of these and similar studies was to try and find ways to counter the de-stabilizing effects of the various crises (Beaudin, 2001), particularly in formulating a strategic platform for resource renewal, it was felt that these initiatives did nothing more than exaggerate an already robust folklore surrounding this industry. For decades, it was felt that this industry was infallible, irreplaceable

even. History shows us that neither of these is true. In fact, a careful dissection of the issues shows tow common denominators that have been hurting this industry for decades. The first centers around an apparent lack of sustainable conservation practices. The second deals with the need for sound management practices built into a strategic platform of renewal for this resource. These two are especially important to understand because renewable resources are seen as natural capital and are intended to contribute in a meaningful way to development (Goff, Sheppard, and Saunders, 2002).

While the earliest intentions to "fix" this industry so-to-speak, were admirable, little was attempted, and even less accomplished, on the side of how to assess business and organizational philosophy and performance of the companies operating in this sector. Nowhere is this more true than on the marketing side of things, especially where market orientation is concerned. As such, Sheppard (2009) completed a rigorous assessment of the dimensional constructs of market orientation for companies operating in the commercial fish processing sector of Atlantic Canada. It is believed that such an assessment would be beneficial in The New England States context. This position is predicated upon the fact that while each of the two geographic regions operates under a different regulatory structure, each region is the same in terms of the issues mentioned earlier. Further, each setting is the same, or similar, in terms of its i) source of raw material and species harvested, ii) processing technology, iii) market destinations for processed product, iv) turbulent operational environment, and v) level of competition.

THE RESEARCH OPPORTUNITY

This industry sector is a major contributor to the economic well-being of this region as a whole, especially at the community and local levels. It is therefore important to understand the environmental influences on this industry. It is equally important to understand that rigorous assessments of the business and economic models in this seasonal industry setting have been lacking. Other than Sheppard (2009), there have been no rigorous attempts to assess the marketing capabilities of the fish processing companies, nor any attempts to develop a market orientation. It has also been argued that sustainable business and development practices are needed at the local and community levels. Developing a market orientation is one way for these companies to refine growth and develop sustainable business and marketing practices. In the context of economic development this will provide sustainable employment and generate new development in the sense that it will help these companies avail themselves of new market opportunities (eg; new market destinations for processed product).

The primary purpose, then, of this research project is to develop a generalized market orientation measurement instrument in the context of the North East Atlantic Coast commercial seafood processing industry. This will be accomplished by first developing an interpretable solution of market orientation for the New England States setting. This will help provide the basis for the comparative analysis with the market orientation model developed by Sheppard (2009) in Atlantic Canada's commercial seafood processing industry. Combining both models will provide the framework for the generalized model.

LITERATURE REVIEW

Benefits and Limitations of market Orientation

There is a paucity of literature espousing the benefits of developing a market orientation. Generally, developing a market orientation is seen as a positive initiative for companies, and industries as a whole. There is a direct positive link between developing a market orientation and the overall performance of the firm, both in terms of objective performance measures and subjective performance measures (Sheppard & Radulovich, 2009; Dawes, 1999). Developing a market orientation is also a way for companies to assess their resources and capabilities (Cervera, Molla, and Sanchez, 2001), which is instrumental in developing core competencies and hence competitive advantage (Hoskisson, Hitt, and Ireland, 2004). Both of these findings further the work of Pelham and Wilson (1995) who argue that developing a market orientation in small companies is a source of competitive advantage.

Developing such a model will help establish the dimensions of market orientation in this setting, a common denominator found in the market orientation literature. From a company perspective it will help management to address specific issues pertaining to resources and capabilities, identify sustainable practices in terms of new business opportunities and employment levels, identify new strategies that need pursuit, and help establish the development of market orientation as a key ingredient in local economic development practice.

However the arguments in favor of developing a market orientation must be weighed against the potential negative aspects of such. A company needs to consider i) the issues surrounding definition, scope, measurement, and the strategic role of marketing orientation, ii) the arguments concerning the market orientation-performance relationship, and iii) and the research findings in support of companies (in this case, small companies) developing a market orientation. Of particular importance, does the cost-benefit analysis provide a realistic outlook for the company over the long-term?

Sheppard's (2009) Seasonal Market Orientation Model

The findings of Sheppard (2009) resulted in the construction of a seasonal parsimonious market orientation model for the Atlantic Canadian commercial fish processing sector. Using a survey design, each of the 485 processing companies in this setting had been surveyed for their market orientation behavior. Utilizing reliability analysis, followed by exploratory factor analysis (EFA), and then confirmatory factor analysis (CFA) via LISREL 8.80 for Windows (Jøreskog and Sørbom, 2006), an interpretable six-dimensional construct model of market orientation resulted. See Table 1.

TABLE 1
PARSIMONIOUS MARKET ORIENTATION MODEL

Construct	Label	α	Average Variance Extracted (AVE)
Customer Orientation	CUST	0.868	0.77
Competitor Orientation	COMP	0.897	0.77
Inter-functional Coord.	INTF	0.900	0.78
Profit Orientation	PROF	0.924	0.87
Intelligence Dissemination	INTD	0.924	0.90
Responsiveness	RSPVN	0.694	0.57

$\chi^2 = 1295.76$; df = 362; p-value = 0.00000
Root Mean Square Error [RMR] = 0.077; Comparative Fit Index [CFI] = 0.93
Incremental Fit Index [IFI] = 0.93; Normed Fit Index [NFI] = 0.90; Non-normed Fit Index [NNFI] = 0.92
Range of Standardized Loading Estimates = [0.42 – 0.99], with all t-values > 2.00
All AVE values > 0.50 = convergent validity
Largest value for shared variance between all pairs of constructs = 0.55 < 0.57 (smallest AVE value), hence discriminant validity and construct validity.

Note: Variables were measured on a 1 to 5 Likert scale; α = Cronbach's alpha.

This model is important to note because it is believed that the same, or similar, findings will present in the New England setting, thus providing the bases of the comparative model sought. It will also provide the foundation for a more generalized model of market orientation in the broader North East Coast commercial fish processing sector, a fundamental recommendation in much of the research done to date.

METHODOLOGY

Similar to the works of Sheppard (2009), Matsuno, Mentzer, and Rentz (2003), Matsuno, Mentzer, and Rentz (2000), Dobni and Luffman (2000), Gray, Matear, Boshoff, and Matheson (1998), and Deng and Dart (1994), this study utilizes an exploratory design. Using Churchill (1979), the parsimonious modeling approach is used to discover the market orientation construct's (model) in this setting. Effectively, this study, like those mentioned, is concerned with first establishing the dimensional constructs of market orientation rather than the rigorous testing of predefined hypotheses. As such, there will be no analyses of the detailed effect of the constructs.

Utilizing the N.A.I.C.S Database, a directory of companies was established for the New England setting. Accordingly, 85 companies were identified in the processing sector, and used in this project. In the period September 2010 to November 2010, each company was surveyed by way of a mail-out questionnaire. Only one survey was sent to each company, asking that a person in a "position of responsibility" complete the survey on behalf of the company, thus resulting in a single respondent.

There are arguments against using a single informant, most notably that it may limit the data findings. For instance, those responding might yield too optimistic a picture about the levels of market orientation within the company (Kohli, Jaworski, and Kumar, 1993), or it may lead to position bias (Pelham and Wilson, 1995). While it is recognized that multiple informants may help alleviate these concerns, it was felt that due to the high level of volatility in this sector and fear of increasing the rate of non-response, multiple respondents were not contacted.

DATA ANALYSIS AND DISCUSSION

Response Rate and Distribution Characteristics

Based on information that was available through the N.A.I.C.S. Database, a sample frame of 85 companies was identified and surveyed. Of these, sixty-seven surveys were returned in good order, fully completed. Two envelopes were returned un-opened. Further checking revealed that these two companies had gone out of business. Subsequently, this resulted in an adjusted response rate of 80.72% [67/(85-2)]. Proctor (2005) and Jackson (1999), both reporting in an American context, say that achieving a 50% response rate on the first round is good, and that a first-round response rate of about 50% should be considered average, respectively. For the purposes of this study a first-round response rate of 80.72% should be considered to be very good.

Data purification continued with the removal of four surveys. A screening question asks respondents to identify their business environment as either "steady and unchanging" or "unsteady and changing". These four were removed because the respondent in each case had indicated that their business environment was probably better described by the former characteristic. Lawerence and Lorsch (1969) suggested that companies should probably limit their marketing efforts under such conditions, while Kohli and Jaworski (1990) say that when industries operate under stable market conditions and preferences, pursuit of market orientation may not be in the best financial interests of the company. Since there were no other issues, 63 usable surveys remained for analysis.

Data from these questionnaires was then entered into SPSS for Windows, Version 19. Following a descriptive analysis of the data, it was found that a large majority of the respondents are owner/operators, with many years experience. A basic assumption here is that these individuals have a firm grasp on the industry in which they work. A large majority of respondents have more than a high-school education, suggesting that they have the capability and background to run the operations in which they work and or own. The majority of companies operate in what they consider to be a mixed industry sector, with a mixed focus on species processed. Considering the issues apparent in this industry, these two things may be indicative of the innovative potential and tendencies of companies trying to compete and survive. Finally, all of the companies that responded are SME's. The market orientation literature is supportive of SME's exploring a market orientation, especially when it is felt that SME's are likely more flexible to changing market and operating conditions. Table 2 provides a summary of the industry profile.

TABLE 2
INDUSTRY PROFILE OF NEW ENGLAND COMMERCIAL FISH PROCESSORS

Ownership	*Percent of Respondents*
Owner/Operator	48/76.2%
Manager	15/23.8%
Independently owned: 56/63 =89% Yes; 7/63 = 11% No	

Education Level	*Percent of Respondents*
High-school diploma	13/20.6%
Community college diploma/certificate	16/25.4%
Private trades school diploma/certificate	8/12.7%
Under-graduate degree	21/33.3%
Master's degree	5/7.9%

Industry Sector	*Percent of Companies*
Inshore	18/28.6%
Mixed	**45/71.4%**

Species Processed	*Percent of Companies*
Ground fish/pelagic/estuarial	12/19%
Shell-fish	7/11.1%
Marine plant/farmed shell fish/other	9/14.3%
Mixed	**35/55.6%**

Company Size (# employee's)	*Percent of Companies*	*Average percentage*
Less than 50	25/39.7%	Full-time - 86.2%
50 – 100, but not including 100	29/46%	Part-time - 13.8%
100 – 250, but not including 250	9/14.3%	Year-round - 90.1%
		Seasonal - 8.9%

Gross Revenue in $US	*Percent of Companies*
$500, 000 – 1 million, but not including 1 mil	14/22.2%
$1 – 5 million, but not including 5 mil	12/19.0%
$5 – 10 million, but not including 10 mil	1/1.6%
$10 – 25 million, but not including 25 mil	7/11.1%
$25 – 50 million, but not including 50 mil	25/39.7%
$50 – 100 million, but not including 100 mil	4/6.3%

Market destination for finished product	*Percentage of revenues earned*
New England States - 63/100%	New England States - 51.5%
Other states in US – 58/92.1%	Other states in US - 39.44%
Canada – 36/57.1%	Canada - 7.68%
Countries other than Canada - 11/17.5%	Countries other than Canada - 1.38%

Scale Purification via Reliability Analysis

To initialize the first stage of scale purification, a reliability analysis (using Cronbach's alpha) was conducted on each of the eight market orientation constructs, as found in the questionnaire. While there

are two broad types of reliability (test-retest and internal consistency) and several types of reliability coefficients, coefficient alpha is widely used in marketing studies to assess internal consistency (Babin, 1994; Peter, 1979), and easily estimated following a single administration and receipt of survey responses.

Cronbach's alpha is a popular method to measure reliability (Christmann and Van Aelst, 2006). Generally, the minimum threshold, and most recommended and used value for Cronbach's alpha, and hence the reliability of the test, is 0.7 (Christmann and Van Aelst, 2006; Kline, 1993; Nunnally, 1978). Others, such as Babin (1994), DeVillis (1991), and Robinson, Shaver and Wrightsman (1991) have considered lower levels of reliability acceptable in the early stages of scale development. Jackson (1999) says that "a rule of thumb would be to have a minimum coefficient of 0.60". Cronbach (2006) and Helmstater (1964) have said that a reliability of 0.5 or above is considered to be acceptable. Despite his recommendation of using 0.7 as the minimum value for reliability, Nunnally (1978) also supports this position, saying that the minimum acceptable level of reliability is 0.5. See Table 3.

TABLE 3
RELIABILITY ANALYSIS

Construct	Label	Initial α	Final α	Item's Retained
Customer Orientation	CUST	.768	.768	All
Competitor Orientation	COMP	.895	.895	All
Inter-functional Coordination	INTF	.885	.885	All
Profit Emphasis	PROF	.911	.911	All
Intelligence Generation	INTG	.365	.467	None
Intelligence Dissemination	INTD	.557	.798	1-3, 5
Response Design	RESD	.794	.794	All
Response Implementation	RESI	.530	.700	1,2,4,5

Due to low reliability, Jaworski and Kohli's (1993) intelligence generation construct was removed. This construct was also deleted from Sheppard (2009). For each of the customer orientation, competitor orientation, inter-functional coordination, profit emphasis, and response design, all of the items were retained for exploratory factor analysis. One question was deleted from each of intelligence dissemination and response implementation. This leaves seven market orientation constructs with alphas greater than 0.60. A total of 37 questions (from the original 44) were retained for exploratory factor analysis.

Scale Purification via Exploratory Factor Analysis

Scale purification continued with exploratory factor analysis (EFA). This was used to explore the underlying structure of the data and determine which questions appear to best measure the various dimensions of market orientation, and which items could be deleted from the market orientation scales altogether. Due to similarities in the scales of Jarworski and Kohli (1993) and Narver and Slater (1990) there was expected to be some overlap between their respective scales and some item redundancy (Gray et al., 1998).

The remaining 37 market orientation questions were factor analyzed using a Maximum Likelihood extraction with Varimax rotation. The Bartlett Test of Sphericity (approximate Chi-square = 4409.452; df = 666; Sig. 0.000) and the Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy Index (value = 0.617**)** confirmed the appropriateness of the data for EFA. However, a caution needs to be exercised here. The Bartlett Test of Sphericity is sensitive to sample size. With small sample's, correlations tend to be statistically significant. This may potentially devalue the test, meaning the findings may not mean much

at all. Further, the range of values for KMO is 0.00 to 1.00. The rule of thumb is to have this measure as high as possible, presenting a situation where factors are more likely to load as a single unique entity. Values that are found to be low illustrates a data situation where two or more factors may want to load together as a common factor. This can be problematic for factors that have little in common. Values in the range 0.50 to 1.00 are deemed to be acceptable. However, an accepted minimum, mediocre, value for KMO is 0.60.

Designating an eigenvalue greater than 1, the first rotation appeared to recognize six factors, or dimensions, one less than the number remaining after the reliability analysis. Designating six factors, a second rotation was performed. However, this rotation appeared to recognize a 5-factor solution. As before, 5 factors were then designated, only to find that the rotation recognized a 4-factor solution. A final rotation, designating 4 factors, was performed. This resulted in a 4-factor parsimonious solution, with a cumulative percentage of variance explained equal to 83.23%. Low loading items (< 0.4) and cross-loading items that exhibited poor discriminant validity were deleted from the model. This is supported by Johnson and Wichern (1998) and Rummell (1967), with both saying that variables with a loading greater than 0.4 are considered to be high, and therefore should be retained in the model.

For the New England States setting, all items did not load as predicted. Factor 1 (Functional coordination, labeled FUNCOR) is a combination of three constructs from the original scales – competitor orientation, inter-functional co-ordination, and intelligence dissemination. Gray et al. (1998) had similar findings in that inter-functional co-ordination and intelligence dissemination loaded together. Just as they have concluded, one could expect companies with better coordination between departments to also have better internal communication systems (Gray et al., 1998). An extension of this logic assumes the same to be true in regards to companies having better external communication systems to determine what its competitors are doing, and functionally being able to get this back into the company for dissemination. Factor 2 (Responsiveness, labeled RSPVN), a combination of Jaworski and Kohli's (1993) response design and response implementation constructs, loaded as predicted. Sheppard (2009) had similar findings. Considering the above discussion on how to interpret KMO values, the presence of Factor 1 and Factor 2 should not come as a complete surprise. Factor 3 (Customer Orientation, labeled CUST) and Factor 4 (Profit Orientation, labeled PROF) both loaded as predicted, and similar to Sheppard (2009). The result of the EFA was a parsimonious and interpretable solution that contains 28 questions out of the original 44 market orientation questions. See Table 4.

TABLE 4
RESULTS OF EXPLORATORY FACTOR ANALYSIS

Market Orientation Variable	Market Orientation Factor (Construct)			
	FUNCOR	RSPVN	CUST	PROF
Customer orientation Q1	.044	.217	.841	.108
Customer orientation Q3	.155	.157	.677	.038
Customer orientation Q4	.012	.814	.409	-.085
Customer orientation Q8	-.046	.184	.649	.050
Competitor orientation Q1	.643	.752	-.050	-.018
Competitor orientation Q2	.783	.478	-.207	.057
Competitor orientation Q3	.891	.124	.183	.088
Competitor orientation Q4	.787	-.089	.169	.056
Competitor orientation Q5	.745	-.069	-.051	-.173
Competitor orientation Q6	.763	-.106	-.025	-.153
Inter-func Co-ord Q2	.535	.267	.048	-.690
Inter-func Co-ord Q3	.875	.203	-.098	-.157
Inter-func Co-ord Q4	.912	-.083	.182	.255
Inter-func Co-ord Q5	.904	-.211	.125	.092
Inter-func Co-ord Q6	.614	.456	.239	-.339
Intelligence Dissem Q1	.816	.297	.136	-.091
Intelligence Dissem Q2	.709	-.319	.467	.259
Intelligence Dissem Q3	.715	-.194	.570	.051
Intelligence Dissem Q5	.543	.306	.114	-.313
Profit Orientation Q1	.410	.523	.061	.444
Profit Orientation Q2	.060	-.148	.189	.930
Profit Orientation Q3	.053	-.018	.571	.792
Profit Orientation Q4	.233	.035	.473	.778
Response Design Q1	-.064	.686	.286	-.442
Response Design Q4	-.275	.753	.326	-.063
Response Design Q5	.064	.841	.184	-.088
Response Implement Q2	.172	-.531	.763	-.080
Response Implement Q4	.041	-.874	-.019	.133

Due to the smallness of the sample a confirmatory factor analysis (CFA) using LISREL was not conducted for the New England setting. While the N.A.I.C.S database provided the directory of companies for this setting, it may not be an all-inclusive one. It is recognized that multiple informants may have provided a larger sample, so-to-speak, but such was not possible at this time. Further, it would not have been consistent with the approach used by Sheppard (2009) in the Atlantic Canadian setting. A future research initiative will likely involve further work at the local levels to determine whether or not it is possible to develop a more complete sampling frame.

THE AGGREGRATE MODEL

As discussed, the one setback for the New England States setting was the smallness of the usable sample. Notwithstanding this, the results of the reliability analysis for each setting depicted identical models in terms of the remaining constructs. The EFA for each setting also depicted models that were highly similar. While the two settings are unique in terms of jurisdiction, both are close in geographic proximity. In terms of operations, both settings are constrained by the realities of a "changing and unsteady", or volatile environment. Companies in both settings access the same source of raw material,

and use the same processing technology for finished product. Each has common market destinations for its processed product, with each setting (country) being the other's primary trading partner. Companies under study in both settings are identified as SME's, with a majority of companies utilizing a "mixed industry structure" and having a "mixed species" processing platform/capability.

Scale Purification via Reliability Analysis for the Aggregate Model

As before, scale purification was initialized on the aggregate model using reliability analysis (Cronbach alpha's). Table 5 provides the relevant summary.

TABLE 5
AGGREGATE RELIABILITY ANALYSIS

Construct	Label	Initial α	Final α	Item's Retained
Customer Orientation	CUST	.768	.803	1-5,7,8
Competitor Orientation	COMP	.895	.895	All
Inter-functional Coordination	INTF	.885	.885	All
Profit Emphasis	PROF	.911	.911	All
Intelligence Generation	INTG	.365	.467	None
Intelligence Dissemination	INTD	.759	.839	1-4
Response Design	RESD	.678	.726	1,2,4,5
Response Implementation	RESI	.709	.709	All

Scale Purification via Exploratory Factor Analysis for the Aggregate Model

The 36 market orientation questions that remained from the reliability analysis were factor analyzed using a Generalized Least Squares extraction with Varimax rotation. The Bartlett Test of Sphericity (Approximate Chi-square = 4452.453 ; df. = 210; Sig. = 0.000) and the Kaiser-Meyer-Olkin (KMO) measure of Sampling Adequacy Index (value = 0.864) confirmed the appropriateness of the data for EFA. Designating an eigenvalue greater than 1, the first rotation was non-conclusive in terms of the number of unique factors recognized - the loadings on individual items appeared to recognize a four-factor solution. Designating four factors, a second rotation was performed. As such, a four-factor solution was recognized, with a cumulative percentage of variance explained equal to 69.256 percent. See Table 6 for the relevant summary.

All items in the aggregate model did not load as predicted. As before, low loading items (< 0.4) and cross-loading items that exhibited poor discriminant validity were deleted from the model. The result of the exploratory factor analysis was a parsimonious and interpretable solution that contains 21 questions out of the original 44 market orientation questions. Four factors make up the parsimonious model: Factor 1 (Competitor Orientation, labeled COMP), Factor 2 (Inter-functional Coordination, labeled INTF), Factor 3 (Customer Orientation, labeled CUST), and Factor 4 (Profit Orientation, labeled PROF).

Similar to Sheppard (2009), the four-factor aggregate solution does not recognize intelligence generation as a key ingredient in market orientation. Considered one of the critical factors of market orientation (Gray et al., 1998), the absence of this construct may potentially indicate that the level of market orientation may not be considered to be high (Dobni and Luffman, 2000). Unlike Sheppard (2009), the disappearance of intelligence dissemination, response design, and response implementation from the aggregate model did present a surprise result.

TABLE 6
AGGREGATE EXPLORATORY FACTOR ANALYSIS

Market Orientation Variable	Market Orientation Factor (Construct)			
	COMP	INTF	CUST	PROF
Customer orientation Q1	-.068	.262	.708	.211
Customer orientation Q2	.119	.141	.771	.177
Customer orientation Q3	.059	.143	.758	.235
Customer orientation Q4	.208	.067	.714	.214
Customer orientation Q5	.208	.148	.607	.220
Competitor orientation Q1	.850	.117	.148	.153
Competitor orientation Q2	.845	.215	.065	.247
Competitor orientation Q3	.544	.303	-.001	.089
Competitor orientation Q4	.749	.143	.202	.286
Competitor orientation Q5	.653	.266	.000	.093
Competitor orientation Q6	.612	.323	.176	.324
Inter-func Co-ord Q1	.083	.609	.302	.081
Inter-func Co-ord Q2	.202	.713	.225	.021
Inter-func Co-ord Q3	.198	.743	-.014	.077
Inter-func Co-ord Q4	.210	.812	.053	.174
Inter-func Co-ord Q5	.214	.801	.158	.200
Inter-func Co-ord Q6	.197	.623	.344	.009
Profit Orientation Q1	.347	.054	.303	.497
Profit Orientation Q2	.214	.138	.177	.765
Profit Orientation Q3	.201	.128	.251	.938
Profit Orientation Q4	.235	.103	.250	.872
ALPHA	.900	.890	.850	.910

Scale Purification via Confirmatory Factor Analysis for the Aggregate Model

To confirm the dimensions of market orientation, confirmatory factor analysis (CFA) via LISREL 8.80 for Windows (Jøreskog and Sørbom, 2006) was used to test whether the four dimensional model arrived at in the EFA is a satisfactory representation of market orientation. Due to the inter-correlations between the four dimensions, it is expected that a common high order factor (overall market orientation) to be present (Gray et al., 1998; Dabholkar, Thorpe, and Rentz, 1996).

The results of the confirmatory factor analysis indicated that each item loaded significantly on its respective construct. A variety of fit indices were examined, with the results indicating a reasonable and acceptable fit of the four-factor measurement model (see Table 7). This conclusion is reached on the basis of a number of fit statistics: $\chi 2 = 945.72$, df = 183, p-value = 0.00000, Root Mean Square Error [RMR] = 0.071, Comparative Fit Index [CFI] = 0.91, Incremental Fit Index [IFI] = 0.91, Normed Fit Index [NFI] = 0.90, Non-normed Fit Index [NNFI] = 0.90.

TABLE 7
AGGREGATE PARSIMONIOUS MARKET ORIENTATION MODEL

Construct	Label	α	Average Variance Extracted (AVE)
Customer Orientation	CUST	0.85	0.74
Competitor Orientation	COMP	0.90	0.76
Inter-functional Coord .	INTF	0.89	0.75
Profit Orientation	PROF	0.91	0.85

$\chi^2 = 945.72$; df = 183; p-value = 0.00000
Root Mean Square Error [RMR] = 0.071; Comparative Fit Index [CFI] = 0.91
Incremental Fit Index [IFI] = 0.91; Normed Fit Index [NFI] = 0.90; Non-normed Fit Index [NNFI] = 0.90
Range of Standardized Loading Estimates = [0.49 – 0.98], with all t-values > 2.00
All AVE values > 0.50 = convergent validity.
Largest value for shared variance between all pairs of constructs = 0.57 < 0.74 (smallest AVE value), hence discriminant validity and construct validity.

Note: Variables were measured on a 1 to 5 Likert scale; α = Cronbach's alpha.

As shown, the magnitudes of the standardized loading estimates ranged from 0.49 to 0.98, and all loadings were significant (i.e. all t-values were greater than 2.00) (Anderson and Gerbing, 1988). Additionally, average variance extracted (AVE) was used to demonstrate convergent validity (Fornell and Larcker, 1981). All AVE values were greater than 0.50, demonstrating convergence. Discriminant validity is present since the largest value for shared variance between all pairs of constructs is 0.57, which is less than the lowest value for AVE (0.74) (Fornell and Larcker, 1981). Hence, construct validity is present.

The results of the confirmatory factor analysis provides acceptable support for the proposed four-factor model of market orientation. This would suggest that market orientation in the North East Atlantic commercial fish processing context is a multidimensional construct consisting of 4 sub-dimensions, and may be best measured by 21 market orientation questionnaire items using a five-point Likert scale. See Table 8 for the complete parsimonious model.

TABLE 8
CONFIRMATORY FACTOR ANALYSIS OF ITEMS AND MEASUREMENT PROPERTIES OF PARSIMONIOUS MARKET ORIENTATION SCALE

Scale Items	Standardized Loadings	t-Values
Customer Orientation (CUST); α = 0.85		
Dominant Questions:		
1.We encourage customer comments and complaints because they help us do a better job.	0.72	13.16
2. After-sales service is an important part of our business strategy.	0.78	14.79
3. We have a strong commitment to our customers.	0.77	14.32
4. We are always looking at ways to create customer value in our products.	0.76	14.07
5. We measure customer satisfaction on a regular basis.	0.70	12.51

Competitor Orientation (COMP); α = 0.90		
Dominant Questions:		
1. We regularly monitor our competitor's marketing efforts.	0.83	16.59
2. We frequently collect marketing data on our competitor's to help direct our marketing plans.	0.89	18.62
3. Our salespeople are instructed to monitor and report on competitor activity.	0.61	10.77
4. We respond rapidly to competitor's actions.	0.82	16.23
5. Our top managers often discuss competitor's actions.	0.69	12.61
6. We consider opportunities based on competitive advantage.	0.76	14.63
Inter-functional Coordination (INTF); α = 0.89		
Dominant Questions:		
1. In our firm the marketing people have a strong input into the development of new products and services.	0.65	11.76
2. Marketing information is shared with all departments.	0.77	14.59
3. All departments are involved in preparing business plans and strategies.	0.71	13.03
4. We do a good job integrating the activities of all departments.	0.82	16.06
5. The marketing people regularly interact with other departments on a formal basis.	0.84	16.83
6. Marketing is seen as a guiding light for the entire firm.	0.72	13.35
Profit Orientation (PROF); α = 0.91		
Dominant Questions:		
1.Our management information system can quickly determine the profitability of our major customers.	0.65	11.96
2. Our management information system can quickly determine the profitability of our product lines.	0.83	16.86
3. Our management information system can quickly determine the profitability of our sales territories.	0.98	22.59
4. Our management information system can quickly determine the profitability of our distribution channels.	0.95	21.31

Note: Variables were measured on a 1 to 5 scale; α = Cronbach's alpha.

INDUSTRY INDEX VALUATION FOR THE AGGREGATE PARSIMONIOUS MODEL

An industry index score was calculated for each of the constructs in the aggregate parsimonious model. Similar to Sheppard (2010) and Sivaramakrishnan, Zhang, Delbaere, and Bruning (2008), this was accomplished by first finding the mean value of the responses to the questions for each of the four constructs in the parsimonious model. Next, an overall market orientation index score was calculated by finding the mean value of the responses across all of the constructs in the parsimonious model. Table 9 provides a summary of the index valuation.

TABLE 9
INDEX VALUATION OF THE AGGREGATE PARSIMONIOUS MO MODEL

Market Orientation Construct	Mean	Std. Error	Std. Deviation
Customer Orientation	3.84	0.05	0.87
Competitor Orientation	4.30	0.04	0.66
Inter-functional Co-ordination	3.47	0.05	0.88
Profit Orientation	4.03	0.05	0.82
Overall Market Orientation	3.88	0.04	0.62

The above index scores are to be interpreted in a manner where any value greater than the stated index value is a more positive position for the company, while any value less than that stated is a more negative position for the company. In a general sense, companies should at least strive for an overall market orientation index score of 3.88. However, it must be remembered that individual company circumstances will most likely determine a company's market orientation index score. Therefore, the individual responses given to any of the market orientation questions should be examined before any concrete decisions are made.

LIMITATIONS AND RECOMMENDATIONS

The primary goal in this study was to develop an aggregate parsimonious model of market orientation for the North East Atlantic Coast commercial fish processing industry. This has been achieved. However, the issues surrounding small sample size for the New England assessment must be recognized. While they do not affect the aggregate model significantly, more can be done in this setting to help solidify the dimensions of market orientation at the local level. A caution echoed in other studies is to have more inclusion of survey respondents at the company level. This study is no exception. Finally, justification had been given for collapsing the two databases into one, meaning both were deemed to be the same for the purpose of arriving at a common aggregate model of market orientation. The authors would be remiss not to recognize the possible influence of using cross-cultural data, a future research opportunity no doubt.

Following a more complete assessment of the sample frame, a generalized model will be finalized. As such, this will allow for the testing of pre-defined hypotheses, especially where level and type of market orientation is concerned. Furthermore, it may help identify which forms of market orientation are predominant – myopic marketers, market focused, or obsessed marketers (Harris and Piercy, 1999). Extending this, it may be possible to identify which of Greenley's five clusters of market orientation is predominant – comprehensively market oriented, competitor focused market orientation, customer focused orientation, underdeveloped market orientation, or fragmented market orientation (Greenley, 1995a), or identify which of the three types of marketing efforts of organizations are predominant – marketing implementers, or marketing inactive (Dunn, Norburn, and Birley, 1994). Clearly, these initiatives will help characterize market orientation in this industry setting.

Like Gray et al. (1998), it is possible that there may be different modes of market orientation, whereby different combinations of the factors in the aggregate model may produce similar benefits (Greenley, 1995b). Furthermore, and depending on the desired outcome, it may be possible to determine the relative importance of the factors which make up market orientation. Following the suggestions of Kirca, Jayachandran, and Bearden (2005), and being mindful of the internal and external influences on this industry, it will be important to determine the mediators and moderators of market orientation in this setting.

CONCLUSION

Recognizing the limitations in this study, the findings will add significantly to the research base, and prove valuable to the companies operating in this broad industry sector. Individually, companies must assess the practical value of developing a market orientation at the company level. It must be realized by academics and industry experts alike that developing a market orientation is a work-in-progress. It is this reality that provides the motivation for continued research in area that has been appropriately labeled a contentious sub-discipline of marketing.

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