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A COMPARISON OF LOGISTICS STRATEGIES AND INTEGRATION IN THE U.S. AND GHANA

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ABSTRACT

This manuscript empirically compares logistics strategies and outcomes in Ghanaian and U.S. firms to test the underlying factor structure and measurement equivalences of the Bowersox/Daugherty model and its relationship with critical success factors. A structured questionnaire was used to gather data from Ghanaian and American logistics managers. Using confirmatory factor analysis (CFA), we compared the three dimensions of Overall Logistics Strategy (OLS) - Process Strategy, Market Strategy, and Information Strategy – in the two countries. A structural equation model (SEM) was then used to assess the impact of OLS on perceived organizational competitiveness in the two countries. Although the economic, political, and cultural dimensions of the two countries differed substantially, the relationships among the constructs used were similar. Data from both countries provided strong support for the dimensionality of the Overall Logistic Strategy (OLS). In addition, it was found that OLS, when combined with Logistics Coordination Effectiveness (LCE) and Customer Service Effectiveness (CSE), contributes to organizational effectiveness (COMP) in both the countries studied. This research provides insights into comparative logistics in two completely disparate economies and provides support for the Bowersox/Daugherty logistics/supply chain management typology. The manuscript also provides insights into comparative logistics/supply chain management that have not been previously reported through empirical research.

INTRODUCTION

In comparison to cross-cultural research in other disciplines, a review by Luo, Van Hoek, and Ross (2001) suggests that the cross-cultural study of logistics has received little attention. Luo et al. (2001) argued that modern logistics concepts and practices have mainly been developed in Western country environments. Research into cross-cultural logistics has lagged behind considerably while manufacturing and distribution operations have become increasingly global, and trade among developed and emerging economies has increased significantly

over the last several decades. This lack of attention has resulted in little scholarly and practitioner knowledge about similarities and differences in logistics/supply chain management among countries that vary in size, population, culture, and work force composition. As a result, the authors suggest that cross-cultural logistics/supply chain management research has the potential to enrich our understanding of logistics/supply chain management strategy commonalities and differences among disparate economies. Such studies could provide insights into logistics/

supply chain management that would facilitate improved coordination and increased efficiencies in global logistics/supply chain management.

The role of logistics/supply chain management has evolved and become an integral part of firm's strategic planning processes (Carter, Pearson and Peng, 1997). Globalized markets offer significant opportunities but also offer challenges as firms locate manufacturing and distribution facilities around the world, but also conduct buying selling activities with a wide range of developed, emerging, and less developed countries.

Since consumer buying requires goods and services to be available at the right time, at the right price and in the right place; effective logistics and supply chain management becomes essential to business success. Bowersox and Daugherty (1987) developed a typology that studies important logistics management activities. This typology included process (cost management), marketing (simplifying transactions faced by customers), and information (coordinate logistics activities among suppliers and customers) strategies. This framework provides one approach for empirically assessing cross-cultural logistics/supply chain strategies.

It is well known that logistics and supply chain management is considered a critical success factor in international markets. Therefore, cross-cultural logistics studies have the potential to enrich understanding of practitioners, teachers, and researchers of logistics and supply chain management systems and strategies as they are applied in different national environments in order to contribute to firm competitiveness. For more than two decades, a large body of empirical research has investigated the potential of the Bowersox/Daugherty (1987) typology and presented evidence to validate its usefulness as a framework for studying logistics strategy in the United States and Canada. However, given the mature nature of the Western markets as

compared to the dynamism and growth of the emerging markets, comparative research should provide a broader understanding of logistics and supply chain management across economies and cultures.

For this study the authors investigate the applicability of the Bowersox/Daugherty typology in market environments of two completely distinct economies, the United States of America (USA) and Ghana. Specifically, we examine the role of Overall Logistics Strategy (OLS) on organizational competitiveness (COMP) through Logistics Coordination Effectiveness (LCE) and Customer Service Effectiveness (CSE) using a confirmatory factor analysis and a structural model. We assess the validity of three dimensions of the Bowersox and Daugherty typology that comprises OLS and their relationship to LCE, CSE, and COMP in Ghana and the USA.

The manuscript is organized into the following five sections. The next section presents an overview of the characteristics of the United States and Ghana. The following section reviews relevant literature and develops the research hypotheses. The third section describes the methodology for collecting and analyzing the empirical data. The final two sections address discussions and conclusions of the research and then focus on the relevance and implications of the findings.

TWO DIFFERENT CONTEXTS: GHANA AND THE USA

Ghana and the United States vary in size (the United States is over forty times as large), population (the United States is about 12 times as large), percentage of urban population (the United States' is much greater), makeup of the labor force (a greater percentage of the United States' workforce is services oriented and less is in manufacturing and agriculture), gross domestic product (the United States is 200 times that of Ghana), and the United States is considered to be less corrupt. Table 1 summarizes these results.

TABLE 1
SELECTED COMPARISONS OF THE UNITED STATES AND GHANA*

Category	Ghana	United States
Area (sq km/sq miles) (Slightly smaller than Oregon)	238,533/92,435	9,826,675/3,807,983
Population	25,241,998 est.	313,847,465 est.
Percentage of Population Urban	51% (2010)	82%
Make up of Labor Force	Agriculture: 28.3% Industry: 21.0% Services: 50.7%	Agriculture: 0.7% Industry: 20.3% Services: 79.1%
Gross Domestic Product	\$74.77 billion est.	\$15.06 trillion est.
Climate	Tropical	Varied
Railroads (km/miles)	947/588	224,792/139,683
Paved Roads (km/miles)	9,955/6,186	4,374,784/2,718,438
2011 Public-sector Corruption Index. An indication of domestic public corruption (Higher number > less corrupt).	3.9: 69 of 182 countries.	7.1: 24 of 182 countries.
2011 Bribery Index. An index of likelihood to bribe in host countries when engaging in international trade.	Not Available	8.1: 10 of 28 countries Comparable to France and Singapore

* Sources

- Categories “Area” through “Paved Roads”: United States Central Intelligence Agency World Factbook (www.cia.gov, 2012). Accessed June 20, 2012.
- Categories “2011 Public-sector Corruption Index” and “2011 Bribery Index”: Transparency International (www.transparency.org). Accessed June 20, 2012

As shown in Table 2, the cultural dimensions of these two economies differ greatly in terms of Hofstede’s national work culture dimensions. In general, the United States culture is much lower on Power Distance (less tolerant of unequally distributed power), lower on Uncertainty Avoidance (less comfortable in unstructured situations), much higher on Individualism (more

likely to be concerned with self rather than group), and much higher on masculinity (emphasis on a work focus and career aspirations). By contrast, the culture of Ghana is summarized as more tolerant of unequally distributed power, more comfortable in ambiguous situations, more collectivistic, and less focused on work as an ends.

TABLE 2
ANOVA RESULTS FOR CLUSTER DEVELOPMENT

Security Variables	P-Value	Cluster 1 Means	Cluster 2 Means	Cluster 3 Means
SCSC	0.000	2.88	5.77	4.29
Op Mod	0.000	4.67	6.15	5.87
AR	0.000	4.62	6.57	6.18
SS	0.000	2.23	4.69	2.87
Inspect	0.000	3.42	6.31	5.56
Comm	0.000	3.30	5.84	5.07

The contrast between Ghana and United States is striking. The United States is a large developed economy with a culture that is relatively individualistic, less focused on rules, more focused on work as a goal, and decisive. By contrast, Ghana is a small less developed economy with a culture that is relatively authoritarian, more focused on rules, places greater emphasis on personal relationships, and is less goal driven. The comparison of Ghana and the United States provides an opportunity to evaluate the impact of economic and cultural dissimilarities on logistics/supply chain management strategies and its impact on logistics/supply chain management coordination, customer service, and organizational competitiveness.

Ghana and Supply Chain Management

As a developing country Ghana has enormous growth potential. Accra, its capital city, is a main port that has a developing infrastructure for expanding trade activities. Ghana is a politically stable nation located on the west coast of Africa, and Ghana is bordered by Togo on the east, Cote d'Ivoire on the west and Burkina Faso to the north.

As shown in Table 1, Ghana's geographic area consists of a total area of 239 square kilometers (92,100 square miles) and has a population of 23 million. About 90.7% of the population is represented by eight ethnic groups. They are Akan (45.3%), the Mole-Dagbon (15.2%), the

Ewe (11.7%), the Ga-Dangme (7.3%), the Guan (4%), the Gurma (3.6%), the Grusi (2.6%), and the Mande-Busanga (1%) tribes. Although relatively small, Ghana's Gross Domestic Product (GDP) has been increasingly steadily, from \$32.27 billion in 2007, to \$35.83 billion in 2009 (*CIA World Factbook*, 2010).

Ghana is a country rich in natural resources. Primary mineral exports include gold, diamonds, manganese ore, bauxite, and timber. Agricultural exports include cocoa (it is the primary cash crop and provides almost one-third of its export revenues), shea butter, coconuts, and coffee. Ghana has almost twice the per capita output of its neighboring countries.

Goods and services in Ghana generally use the traditional channels of distribution including wholesalers, agents and distributors, retailers, and individual street traders. Although some suppliers produce and sell directly to government entities and other businesses manufacture or process goods and sell directly to local residents or export the goods. According to one of the coauthors, commercial activities are concentrated in the Accra-Tema, Kumasi, Takoradi and Cape-Coast areas. Because Ghanaian's are very entrepreneurial the economy includes a high percentage of individual proprietorships.

One of Ghana's expert scholars has stated that Ghana will not resolve its economic development problem unless it develops a viable and sustainable supply chain management system. This is a main factor that is key to Ghana's future development. With its extensive raw material and export commodities, Ghana has the potential of accelerating its growth through supply chain management efforts (Biondo, 2009). It is one management function that could take Ghana from an underdeveloped country to a developing country. The key to attaining this goal is focusing attention on developing an effective supply chain management infrastructure (Nuwati, 2010).

LITERATURE REVIEW AND HYPOTHESES

A review of the literature identified eleven studies that have demonstrated a progression of thought and analysis which provides the foundation for the research reported in this manuscript. These studies are summarized as follows:

- Bowersox and Daugherty (1987) used personal and telephone interviews to identify three primary logistics thrusts: process strategy, which emphasizes cost control; market strategy, which concentrates on the reduction of complexity customers' face; and information strategy, which centers on the coordination of information within the firm and throughout the channel.
- McGinnis and Kohn (1990) used mail questionnaires in research that identified Logistics Coordination Effectiveness (LCE), Customer Service Effectiveness (CSE), and Organizational Competitive Responsiveness (COMP) as dependent variables useful for assessing logistics strategy effectiveness.
- McGinnis and Kohn (1993) identified logistics strategy clusters based on the Bowersox/Daugherty typology variables and discussed the variability of LCE, CSE, and COMP among those clusters.
- Clinton and Closs (1997) identified six commonalities of advanced logistics organizations and concluded they have a common objective of managing the logistics process. They concluded that the richness of logistics strategy variables warrant further research
- Kohn and McGinnis (1997a and 1997b) concluded that logistics strategy was stable between 1990 and 1997; and two dimensions (a) management of logistics flows, coordination, and complexity and (b) focus on efficiency, control, and cost reduction comprise logistics strategy. They further concluded that LCE, CSE, and COMP appear to relate to logistics strategy.
- McGinnis and Kohn (2002) used factor analysis to identify two independent variables, one comprised of PROCSTR and INFOSTR and one comprised of MKTGSTR. They concluded that the two independent variables contributed to LCE.
- Autry, Zacharina, and Lamb (2008) used cluster analysis to identify two logistics strategies, Functional Logistics and Externally Oriented Logistics. These two dimensions were similar, but not identical, to the Bowersox/Daugherty typology.
- McGinnis, Kohn, and Spillan (2010) conducted a longitudinal study of logistics strategy using data from 1990, 1994, 1999, and 2008. They concluded that LCE and COMP were good measures of logistics strategy outcomes.
- Spillan, Kohn, and McGinnis (2010) empirically compared logistics strategies of small and large USA manufacturing firms. They found that logistics strategies in small and large United States manufacturing firms did not differ substantially. They also concluded that the six strategies (PROCSTR, MKTGSTR, INFOSTR, LCE, CSE, and COMP) had been replicated, appear to fit

the construct name, and have adequate levels of reliability for further research into logistics/supply chain management.

- Kohn, McGinnis, and Kara (2011) applied confirmatory factor analysis and structural equation modeling to assess logistics strategy and its relation to logistics strategy outcomes. They found that PROCSTR, MKTGSTR, and INFOSTR comprise Overall Logistics Strategy (OLS), and to the extent that LCE is effective and CSE is clear, then OLS would contribute to COMP.

Subsequent research has focused on cross-cultural comparative empirical research into logistics/supply chain management strategy. These two studies are discussed as follows:

- McGinnis, Spillan, and Virzi (2012) compared the results of research into Guatemalan logistics with findings of previous research into United States firms by using a questionnaire that had been translated and back translated into Spanish. The fundamentals of logistics strategy in Guatemala were found to be similar to United States firms. However, it was found that Guatemalan logistics managers placed less emphasis on process strategy but greater emphasis on market and information strategies to achieve logistics coordination effectiveness, customer service commitment, and organizational competitive responsiveness.
- McGinnis, Harcar, Kara, and Spillan (2012) compared logistics/supply chain management in the United States, Guatemala, and Turkey using empirical data gathered from these three countries that differed in size, economies, and cultures. Structural equation modeling was used to assess three dimensions of logistics/supply chain strategy and three outcome variables. The three dimensions (Process Strategy, Market Strategy, and Information Strategy) held for the model of Overall Logistics Strategy (OLS). The relationship of OLS with three dependent

variables (Logistics Coordination Effectiveness, Customer Service Commitment, and Organizational Competitiveness) held for two of the three countries. Insights for those interested in comparative logistics/supply chain management strategies are provided. The Bowersox/Daugherty typology was found to be useful for cross-cultural research into logistics/supply chain management.

Overall, the eleven single-culture studies and two cross-cultural studies of supply chain logistics indicate that further cross-cultural research would increase the understanding of logistics/supply chain management. An opportunity occurred that provided for research into logistics/supply chain management in Ghana. This country is attractive for this research because it is located in Africa, a continent that has not been included in previous logistics/supply chain management cross-cultural research, and differs substantially in terms of its size, population, economy, and culture from other countries studied to date.

Based on the literature review and the results of previous studies, a structural model depicting the overall logistics strategy is linked to process, market, and information strategy as conceptualized by Bowersox and Daugherty (1987). Also, this model shows the link between overall logistics strategy and company/division competitive responsiveness. In this conceptualization, we emphasize that the hypothesized effect on competitive responsiveness (COMP) is through logistic coordination effectiveness (LCE) and customer service effectiveness (CSE). Therefore, we offer the following hypotheses:

H1: Overall Logistics Strategy (OLS) positively influences Logistics Coordination Effectiveness (LCE) in both country environments studied.

H2: Logistics Coordination Effectiveness positively influences Customer Service

Effectiveness (CSE) in both country environments studied.

H3: Customer Service Effectiveness (CSE) positively influences Company/ Division Competitive Responsiveness (COMP) in both country environments studied.

If the hypothesized relationships are supported then it would suggest that OLS, LCE, and CSE are necessary for COMP regardless of the country environment. This would require organizational commitment to OLS, LCE, and CSE in order to achieve COMP across the globe.

RESEARCH METHODOLOGY

Measures and Questionnaire Development

To conceptualize the factors of our research model, we used scales adapted from McGinnis, Kohn, and Spillan (2010). The questionnaire was divided into three parts. In the first part, the overall logistics strategies of the companies were measured by three dimensions; process strategy, market strategy and information strategy. Respondents were asked to determine their level of agreement with three statements each for process, market and information strategies for their company /division on a five point -type scale (1 = definitely agree, 5=definitely disagree). In the second part of questionnaire respondents were asked to respond to three questions regarding logistics coordination effectiveness using similar Likert scale measures (1 = definitely agree, 5=definitely disagree) as was done in the first part of the questionnaire. In the third part of the questionnaire, respondents were asked to respond to seven questions relating to customer service commitment (three questions) and company/division competitiveness (four questions). Again, Likert Scales were used.

Data Collection

Although the data for the US study had been collected at four different time periods, the 1999 data was used as the dataset because the sample

size (N=172) was the largest of the four data sets. This would reduce the likelihood that further analysis would be compromised in the smaller data sets due to chance variation. Identically worded questions were used to collect data for each of the six constructs. The subjects were logistics managers in United States manufacturing firms who: (a) were members of the Council of Supply Chain Management Professionals (CSCMP) – previously the Council of Logistics Management (CLM), (b) were employed by manufacturing firms, and (c) held job titles of manager or higher. The data collection procedure is described in McGinnis and Kohn (2002).

The targeted population for the research comprised businesses in Kumasi, a city in Ghana. The sample consisted of businesses located in areas convenient to one of the co-authors. Four hundred and fifty businesses were sampled. Since Ghana had been a British colony the questionnaire was administered in English via personal interviews. Three hundred and forty-nine (349) businesses participated, a response rate of 77.6%. Because three hundred and thirty-two (332), or 73.8% of all businesses contacted and 95.1% of all respondents, had annual sales of less than the equivalent of US\$ 1,000,000, the balance of the analysis is based on those 332 firms.

The three independent variables and three dependent variables used in this research are presented as Table 3. Included in Table 3 are the items for each variable and the scale reliabilities in the United States and Ghana. Previous research (Kohn and McGinnis, 1997b) has concluded that the six variables are valid when studying logistics strategy using logistics managers in manufacturing firms for subjects.

ANALYSIS AND RESULTS

The first step was to check the construct reliabilities for both countries studied. Table 3 shows comparative average construct reliabilities.

TABLE 3
SCALE ITEMS

Scales/Items*	Reliability Coefficients (Alphas)	
	USA	Ghana
Scale 1: Process Strategy (PROCSTR)	0.574	.619
1. In my company/division, management emphasizes achieving maximum efficiency from purchasing, manufacturing, and distribution.		
2. A primary objective of logistics in my company/division is to gain control over activities that result in purchasing, manufacturing, and distribution costs.		
3. In my company/division, logistics facilitates the implementation of cost and inventory reducing concepts such as Focused Manufacturing and Just-in-Time Materials Procurement		
Scale 2: Market Strategy (MKTGSTR)	.741	.568
1. In my company/division, management emphasizes achieving coordinated physical distribution to customers served by several business units.		
2. A primary objective of logistics in my company/division is to reduce the complexity our customers face in doing business with us.		
3. In my company/division, logistics facilitates the coordination of several business units in order to provide competitive customer service.		
Scale 3: Information Strategy (INFORSTR)	.568	.693
1. In my company/division, management emphasizes coordination and control of channel members (distributors, wholesalers, dealers, retailers) activities.		
2. A primary objective of logistics in my company/division is to manage information flows and inventory levels throughout the channel of distribution.		
3. In my company/division, logistics facilitates the management of information flows among channel members (distributors, wholesalers, dealers, retailers).		
Logistics Coordination Effectiveness (LCE)	.708	.678
1. The need for closer coordination with suppliers, vendors, and other channel members has fostered better working relationships among departments within my company.		
2. In my company logistics planning is well coordinated with the overall strategic planning process.		
3. In my company/division logistics activities are coordinated effectively with customers, suppliers, and other channel members.		
Customer Service Effectiveness (CSE)	.680	.626
1. Achieving increased levels of customer service has resulted in increased emphasis on employee development and training.		
2. The customer service program in my company/division is effectively coordinated with other logistics activities.		
3. The customer service program in my company/division gives us a competitive edge relative to our competition.		
Company/Division Competitiveness (COMP)	.661	.440
1. My company/division responds quickly and effectively to changing customer or supplier needs compared to our competitors.		
2. My company/division responds quickly and effectively to changing competitor strategies compared to our competitors.		
3. My company/division develops and markets new products quickly and effectively compared to our competitors.		
4. In most of its markets my company/division is a (1=very strong competitor, 5=very weak competitor).		

*Except for item 4 of COMP, 1 = Strongly Agree, 2 = Agree, 3 = Neither Agree nor Disagree, 4 = Disagree, 5 = Strongly Disagree.

Although some of the reliability scores were below the suggested levels in the literature, in general we can make a case that these scores are satisfactory for testing and validating the structure reported in Kohn, McGinnis, and Kara (2011). In addition, as coefficient values are relatively receptive to the number of items in the constructs, particularly when constructs have

fewer than 10 items, as in the case of this research, it is common to find coefficient alphas around 0.50 (Pallant, 2007). Table 4 shows a comparison of variable scores between the USA and Ghana respondents. The means of all six variables were significantly different between the USA and Ghana respondents. Possible explanations of these differences are discussed later in the manuscript.

TABLE 4
COMPARISON OF MEANS OF SCALE SCORES*:
LARGE USA MANUFACTURING FIRMS & GHANA MANUFACTURING FIRMS

Scales**		USA	Ghana	Significant mean difference at alpha = 0.05?
Process Strategy (PROCSTR)				
	N	172	332	
	μ	2.33	3.54	YES
	σ	0.706	0.737	
Market Strategy (MKTGSTR)				
	N	172	332	
	μ	2.54	3.36	YES
	σ	0.848	0.737	
Information Strategy (INFORSTR)				
	N	172	332	
	μ	2.77	3.42	YES
	σ	0.717	0.797	
Logistics Coordination Effectiveness (LCE)				
	N	172	332	
	μ	2.58	3.34	YES
	σ	0.730	0.788	
Customer Service Commitment (CSC)				
	N	172	332	
	μ	2.51	3.22	YES
	σ	0.743	0.808	
Company/Division Competitiveness (COMP)				
	N	172	332	
	μ	2.40	3.23	YES
	σ	0.589	0.597	
KMO Measure of Sampling Adequacy		0.832	0.770	
Bartlett's Test of Sphericity		.000	.000	

*Scale Scores = (Sum of item scores of items in that scale) / (Number of items)

**Scales: 1 = Strongly Agree, 2 = Agree, 3 = Neither Agree nor Disagree, 4 = Disagree, 5 = Strongly Disagree.

With the intention of evaluating whether the correlations among variables are suitable for factor analysis, we examined the Kaiser-Meyer-Olkin measure of sampling adequacy (KMO-MSA) (Kaiser, 1970). Table 4 shows the results for KMO tests for sampling adequacy and Bartlett's test for sphericity for the two datasets, Ghana and USA, as well as the mean scores for the constructs in both countries. The value of KMO-MSA was 0.832 for the US sample, and 0.770 for the Ghanaian sample, indicating the data were appropriate for factor analysis. All KMO results were above .50, which is the minimum cut off for factor analysis. Additionally all levels of significance for Bartlett's test for sphericity were less than .005 for both datasets. KMO results along with the Bartlett results indicate the datasets were suitable for factor analysis.

Confirmatory Factor Analysis

To confirm the underlying factor structure, the authors conducted CFA on both datasets using AMOS. We assessed the goodness of the fit of the models using various fit indices discussed in previous studies, including the χ^2 statistic, normed fit index (NFI), non-normed fit index, (NNFI), comparative fit index (CFI) goodness of fit index (GFI); Standardized Root Mean, Square Residual (SRMR); and Root Mean Square Error of Approximation (RMSEA). The two-step approach suggested by Anderson and Gerbing (1988) was used to first examine the measurement model and then the structural model. In the measurement model, the hypothesized relationship between the nine logistics strategic orientations and the three first order factors were examined to understand how well the relationships fit the data. In the structural model, we examined the relationship between the three first order factors (PROCSTR, MKTGSTR, and INFORSTR). The findings supported the underlying factor structure of the 19 items with correlated factors.

The results of the estimation of the first order factor model revealed very strong results for all datasets used as indicated by several different

measures (χ^2 USA= 31.058, and χ^2 GHANA=71.991). While the p-value for the U.S. dataset was insignificant, indicating a very good fit, corresponding p-values for the Ghana sample were significant. However, we think this was due to the sample size difference since the chi-square test is sensitive to large samples and has a tendency to become significant. Other goodness of fit indexes for both countries indicated a good fit (GFI USA=0.962; CFI USA=0.970; GFI GHANA=.954; CFI GHANA=.917).

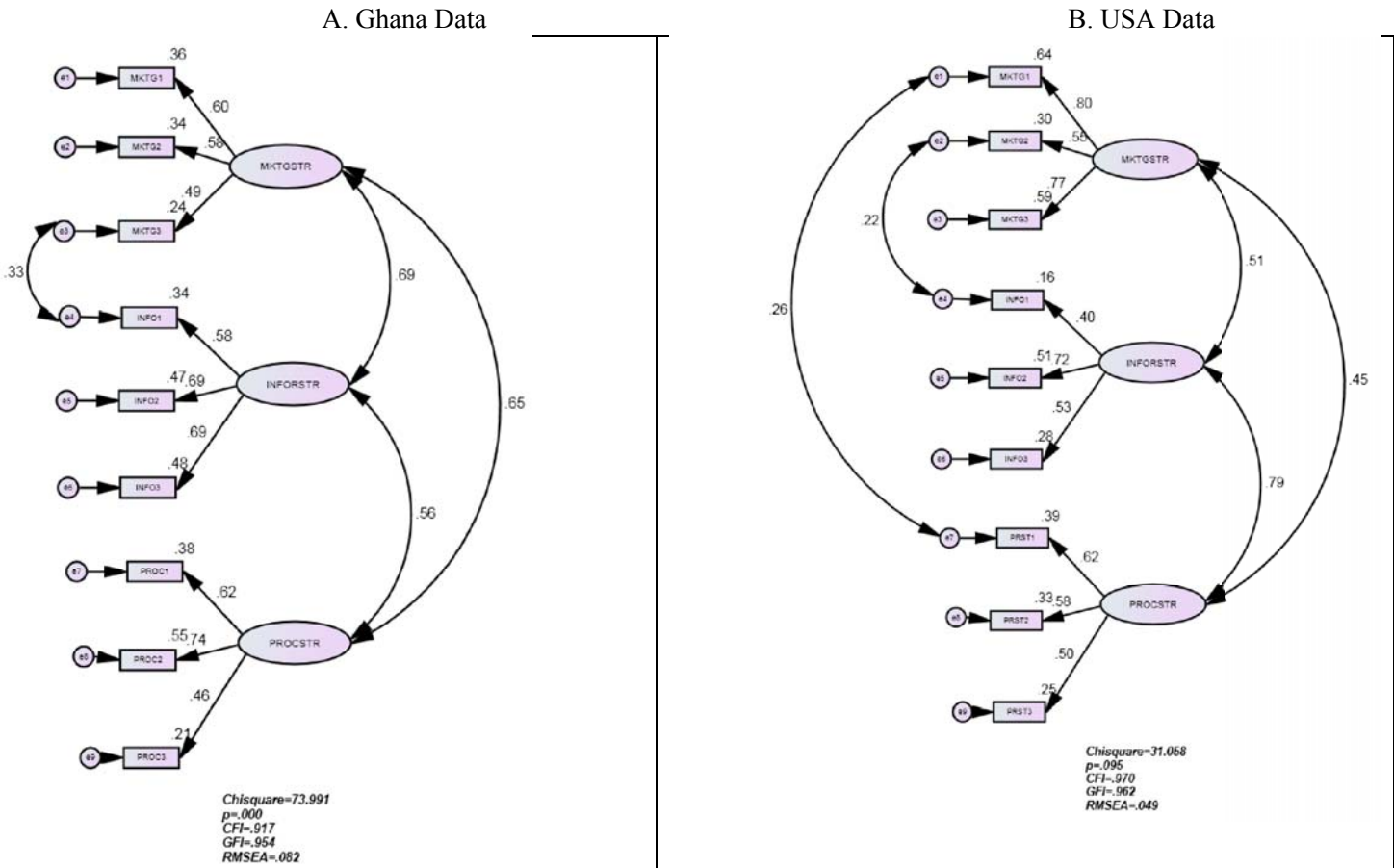
The normalized chi-square (chi-square/degrees of freedom) of the CFA model was smaller than the recommended value of 3.0, the RMR was smaller than 0.05, and the RMSEAs were small (RMSEA USA=0.049; RMSEA GHANA=0.082). Accordingly, the results showed that all loadings in the model were significant, leading us to conclude that the relationships between the items and latent factors were confirmed by the datasets obtained from the two countries. Figure 1 shows the results.

Structural Models

The structural model was used to test the hypotheses of all six factors tested in the measurement model. The hypothesized structural models for both datasets are shown in Figure 2. Inspection of Figure 2 revealed that the all linkages were significant and the directions of relationships were as hypothesized for the US and Ghana datasets. Figure 2 also displays standardized coefficients for the linkages, R^2 values for the variables, as well as correlation coefficients between two sets of measurement variables. Finally, the values for Chi-square, GFI, CFI, and RMSEA values all point to good model fit in both datasets.

A final analysis conducted in this study sought to ascertain whether logistics strategies were homogenous (or heterogeneous) for the United States and Ghanaian respondents. To assess this issue SPSS 16.0's two-step cluster analysis was used to group the independent variables

FIGURE 1
FIRST ORDER CONFIRMATORY FACTOR ANALYSIS FOR OVERALL LOGISTICS STRATEGY



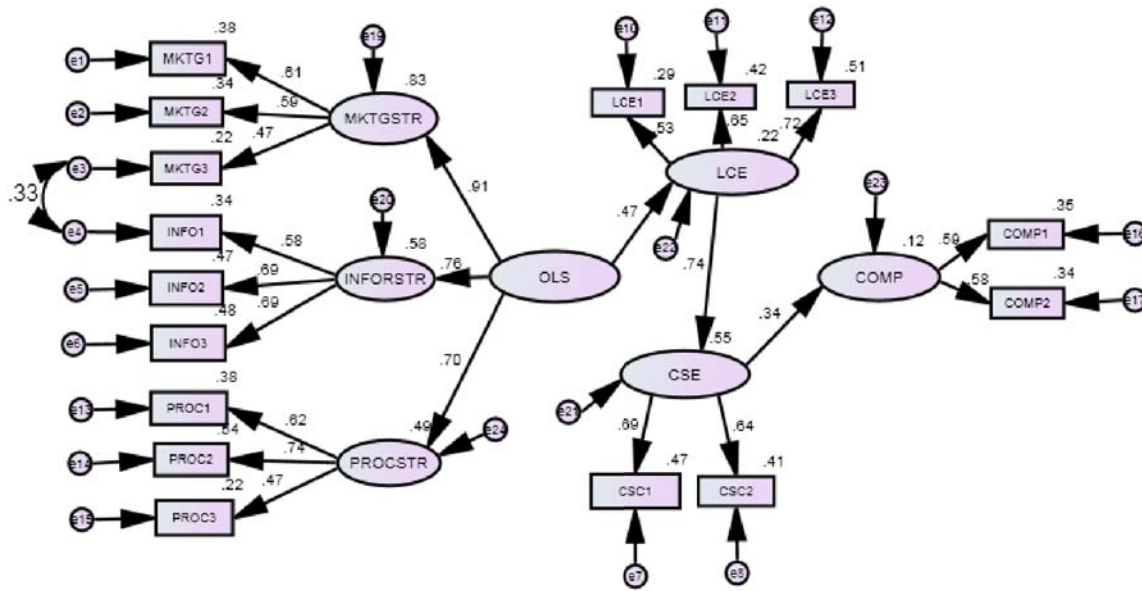
(PROCSTR, MKTGSTR, and INFORSTR) into “strategy clusters”. As shown in Table 5, both sets of respondents grouped into two strategy clusters. For the USA respondents the clusters with lower values for the independent values were named “Intense Logistics Strategy” and the other cluster named “Passive Logistics Strategy.” For the Ghana respondents the clusters were named “Passive Logistics Strategy” and “Inactive Logistics Strategy” respectively. Inspection of Table 5 provides an array of insights into comparative USA and Ghana logistics strategies, as indicated by the respondents. First, both sets of respondents were grouped into two strategy clusters. However, 71.4% of the USA respondents grouped into “Intense Logistics Strategy” and 28.6% of USA respondents were grouped into

“Passive Logistics Strategy.” By contrast, 46.1% of the Ghana respondents grouped into “Passive Logistics Strategy” and 53.9% grouped into “Inactive Logistics Strategy.”

Further examination of the independent variables (PROCSTR, MKTGSTR, INFORSTR) suggest that USA respondents placed substantially greater priority on the components of Overall Logistics Strategy with much better outcomes in the dependent variables LCE, CSE, and COMP. The disparity in the results may be attributed to three issues discussed in the literature review: traditional channels of distribution, the large number of individual proprietorships (compared to corporations), and a primal supply chain. This observation is not intended to reflect on Ghana or its people.

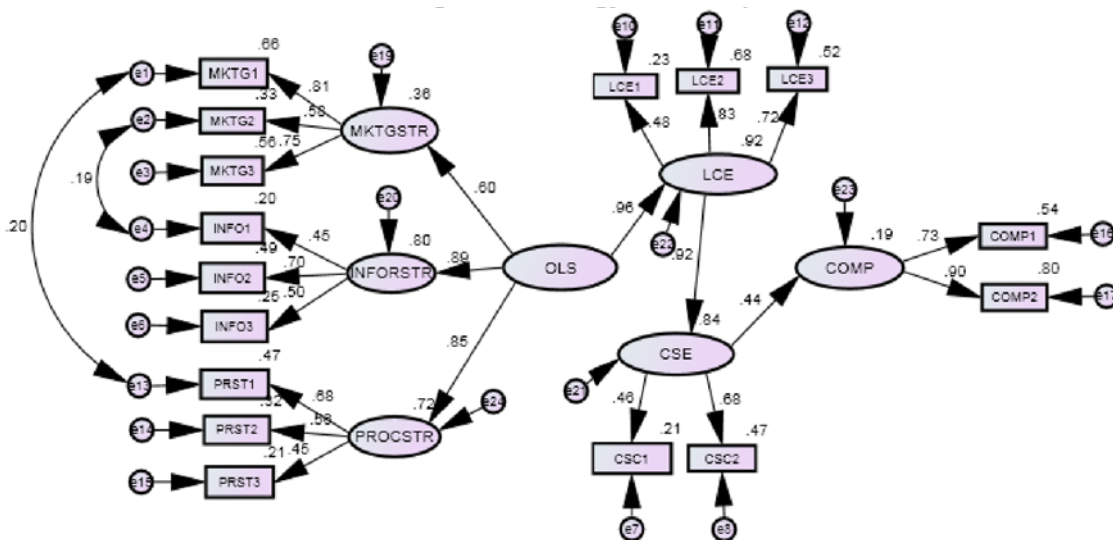
FIGURE 2
SEM FOR OVERALL LOGISTICS STRATEGY AND COMPETITIVENESS

A. GHANA DATA



Chisquare=162.867, p-value=.000, GFI=.941, CFI=.935, RMSEA=.045

B. USA DATA



Chisquare=125.971, p-value=.022, GFI=.916, CFI=.960, RMSEA=.043

TABLE 5
COMPARISON OF CLUSTER ANALYSES RESULTS OF LOGISTICS STRATEGIES:
National Sample of Large US and Ghanaian Manufacturing Firms

	USA (n=172)		Ghana (n=332)	
	Intense Logistics Strategy (n=105, 61.0%)	Passive Logistics Strategy (n=67, 39.0%)	Passive Logistic Strategy (n=153, 46.1%)	Inactive Logistics Strategy (n=179, 53.9%)
PROCSTR				
μ	1.941	2.940**	3.137	3.89**
σ	0.467	0.574	0.731	0.541
MKTGSTR				
μ	2.213	3.060**	2.776	3.866**
σ	0.743	0.741	0.568	0.429
INFORSTR				
μ	2.403	3.446**	2.902	3.862**
σ	0.524	0.589	0.715	0.563
LCE				
μ	2.270	3.072**	3.120	3.523**
σ	0.547	0.713	0.749	0.774
CSE				
μ	2.313	2.841**	2.039	3.456**
σ	0.662	0.753	0.713	0.809
COMP				
μ	2.318	2.534*	3.137	3.300*
σ	0.580	0.582	0.634	0.564

Scales: 1 = Strongly Agree, 2 = Agree, 3 = Neither Agree nor Disagree, 4 = Disagree, 5 = Strongly Disagree.

Notes: ** mean differences are significant at alpha = 0.01; * mean differences are significant at alpha = 0.05.

Rather, the results shown in Table 5 most likely reflect logistics/supply chain strategies that are appropriate for an economy in the early stages of emergence.

DISCUSSION AND CONCLUSIONS

These findings suggest that the Bowersox/ Daugherty dimensions of logistics strategy are appropriate in economies that differ dramatically in terms of size, stage of economic development, and culture. Furthermore, these results suggest that the assumed links between overall logistics strategy (OLS) and organizational competitiveness (COMP) may vary among cultures.

As shown in Figures 1 and 2, the models for logistics strategy and logistics strategic outcomes for Ghana and USA respondents indicate a high level of consistency in terms of the relationships for PROCSTR, MKTGSTR, and INFOSTR to OLS, and the relationship of OLS to COMP through LCE and CSE. Overall, the methodology, based on the Bowersox/ Daugherty typology, is appropriate for the comparative study of logistics/supply chain management strategy in a wide range of economies.

Examination of Table 5 further reveals that a cluster analysis of the Ghana and USA data results in two different overall logistics

strategies. For the USA respondents the two logistics strategies identified were “Intense Logistics Strategies” and “Passive Logistics Strategies.” The two strategies identified for the Ghana respondents were “Passive Logistics Strategy” and “Inactive Logistics Strategy.” As shown earlier in Table 4, mean values of all six variables were significantly lower (higher factor scores) for Ghana respondents compared to United States respondents. Possible explanations for the different intensities of logistics strategies in the two samples may be due to annual revenue. However, a comparison of small and large United States firms (Spillan, Kohn, and McGinnis, 2010) did not reveal substantial differences in variable means based on firm size. Other possible explanations for the substantial differences between Ghana and United States respondents could be (a) differences in levels of competition faced by Ghana respondents, (b) differences in culture (higher power distance, higher uncertainty avoidance, low commitment to the organization, less emphasis on work as an end), (c) fewer competitive pressures, (d) an economy that is more local, rather than national or global, in focus, (e) product/service considerations that place less pressure on logistics/supply chain management, (f) greater competitive advantage from non-logistics/supply chain considerations such as personal relationships and relationship strengths, (g) less national and international trade by the subjects, and (h) less pressure from customers and suppliers. Three issues mentioned in the literature search were traditional channels of distribution, a high percentage of individual proprietorships, and the lack of a viable supply chain management system.

Overall, the results reported in this manuscript suggest that the Bowersox/Daugherty framework provides a strong framework for studying and explaining logistics/supply chain management in two large, dissimilar, economies. In other words, this study validates the dimensionality of the Bowersox/Daugherty measurement model for overall logistic strategy in a cross-cultural

environment. Moreover, this study also confirms the relationships identified in the structural model with respect to the relationship among Overall Logistics Strategy (OLS), Logistics Coordination Effectiveness (LCE) and Customer Service Effectiveness (CSE), and perceived organizational competitiveness.

RELEVANCE AND IMPLICATIONS

The research reported in this manuscript suggests that the fundamentals of USA and Ghana logistics strategies are similar in nature but not in scope. In addition, the results indicate that the Bowersox/Daugherty typology is an appropriate typology for studying logistics/supply chain management strategy across two dissimilar cultures. These results should provide some comfort to trainers/faculty teaching logistics/supply chain management to cross cultural audiences. While there are some differences, the framework of logistics/supply chain management appears to be independent of country/cultural environment. This finding is consistent with the findings of McGinnis, Spillan, and Virzi (2012) and consistent for two of the three firms studied by McGinnis, Harcar, Kara, and Spillan (2012).

For practitioners, these finding suggest that the fundamentals of logistics/supply chain management do not vary greatly in different countries/cultures. The implication is that logistics’ contributions to organizational success cannot be achieved in isolation. As suggested in the results “Overall Logistics Strategy”, “Logistics Coordination Effectiveness”, and “Customer Service Effectiveness” imply broad coordination at many levels of the organization including operations, marketing & sales, and service, procurement, technology, human resource management, and the firm’ infrastructure. Successful logistics strategies have three requirements: a balance of efficiency, customer responsiveness, and coordination throughout the value chain.

In other words, the effects of overall logistics strategy (OLS) on firm competitiveness become

much clearer when firms effectively coordinate their logistics activities (LCE) and implement effective customer service operations (CSE). This does not suggest that other issues, such as local customs, negotiation approaches, and the structure of agreements, will be similar to the extent that logistics/supply chain management appears to be. Finally, those conducting comparative research into logistics/supply management should find that identifying subjects and conducting research requires the collaboration of researchers in the subject country.

SUGGESTIONS FOR FUTURE RESEARCH

This study is part of a series of studies exploring the practices of logistics/supply chain management in other countries/cultures from a perspective of uncovering their impact on customer service and organizational competitive responsiveness. Further research into logistics and supply chain management may benefit from expanding the understanding of logistics/supply chain management decision making by including antecedents and moderating factors (such as competition, market turbulence, and differences in business environment) into the design. In addition to further study of logistics/supply chain management in other nations/cultures, additional insight could be gained by examining the relevance of the Bowersox/Daugherty typology to nonmanufacturing industries including retailing, healthcare, financial services, transportation firms, and food service. These industries may provide a different perspective on the process, market, and information strategy in different environments. Finally, future studies should try to synthesize the accumulated knowledge generated in these cross national studies into a more inclusive framework that provides a conceptual roadmap of the impact of logistics/supply chain management strategies on critical organizational success factors such as global competitiveness and profitability.

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