Strategic Supply Chain for Global Customer Relationship in e-Business Management

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ABSTRACT

Supply chain and customer management for e-integration process has recently received a great deal of attention due to the strategic importance in business entities. A behavioral model is developed that considers several alternatives to expand existing e-business logistic management, or to construct new production-marketing collaboration. Survey study conducts for identifying characteristics of SCM and CRM. This study identifies 1) SERVQUAL dimensions with four outcome variables: purchasing intention, commitment, transition intention, and loyalty for CRM, and 2) five SCM performance measurement: cost, lead-time, feedback, inventory, and reliability performance. The results suggest that management can achieve strategic gains in CRM along with a significant competitiveness of SCM.

Keywords: Supply Chain Management, Customer Relationship Management, Survey Study, Business Performance

INTRODUCTION

High competition in e-business industry has emphasized the need for a linkage between SCM and CRM to facilitate information

flow of inbound level and outbound level. Both end-user (i.e., B2C) and industrial buyer-seller (i.e., B2B) relationships are very complex and complicated (Davis, 1993; Geoffrion and Powers 1995; Li, et al., 2006). Thus, a joint sharing of knowledge, cost savings, supplier relationship, and other strategic alliances are essential. It is important to find a good balance between good customer satisfaction and supply chain efficiency and effectiveness (Beamon, 1999; Cachon, 1999). Thus, the purpose of this paper is to identifying determinants affecting supply chain performance in terms of SCM-CRM linkage. Specifically, this study addresses an empirical study that 1) identifying determinants affecting supply chain performance, and 2) providing an insight for planning strategic supplier-customer linkages. This study performs to implement total planning process of an e-business industry pertinent to strategic SCM planning. Conceptualization and operationalization are established for three independent variables and five dependent variables for developing SCM performance measurement.

BACKGROUND

The need to better understanding supplier or customer behavior is to the interest of many managers focused on those two stakeholders who can deliver long-term profits to the organization. Traditionally, marketers of suppliers and customers have recognized to acquire either new or current competitor's partners. This has required massive advertisement and price-oriented promotions to suppliers, customers, logistics members, and distributors. For the best suppliers and customers, the paradigm of conversation has shifted from acquisition to retention in terms of supplier chain and customer relationship (Holmberg, 2000; Krajewski, et al., 2005; Lee, et al., 1997). This requires a different paradigm and a different and new approach.

The concept of supply chains, SCM has been defined as an integrated subject for information flow and materials flow among different facilities, supplies, customers, and logistics levels. (Forrester, 1961; Mason-Jones and Towill, 1997; Kwon and Suh 2004). Five business functions in SCM have been identified as sourcing, inbound logistics, operations, outbound logistics, and after-market services. The concept of after-market services in SCM is closely related to CRM (Gopal and Cahill, 1992; Shah and Ram, 2006).

Global customer relationship management is concerned with planning, implementing, and evaluating successful relationships between service providers and service recipients. A problem is that SCM and CRM mean different definition to different people. CRM has been defined in numerous ways (Gronroos, 1995; Morgan and Hunt, 1994; and Rigby et al, 2002). For some perspectives, CRM means direct e-mail mails. For others, it is mass customization or developing products that meet individual customer's needs. For IT perspectives, it translates into complicated technical concept related to such as OLAP (online analytical processing) and CIC (customer interaction centers).

CRM is not only focusing on inbound-level customer relationship but also on outbound-level customer relationship in SCM. This function focuses on service center location, service fleet, data mining, and knowledge management. Reichheld (1996) demonstrated the impetus for the interest in CRM and addressed dramatic increase in profits from small increases in customer retention rates. The essence of the information technology revolution and the web environment is the opportunity afforded organizations to select how they interact with their customers. The e-business allows organizations to build better relationships with customers than has been previously possible in the offline business.

By combining the abilities to respond directly to supplier or customer requests and to provide the supplier or customer with a highly interactive, customized experience, organizations have a greater ability today to establish, nurture, and sustain long-term supplier and customer management than ever before. These e-business capabilities complement human resources interactions provided through customer representatives and call centers. Likewise, organizations can select to exploit the low cost of e-business supplier or customer service to reduce their service costs and offer lower-quality service by allowing only electronic contact. The flexibility of e-business interactions allows organizations to select to whom they wish to offer services and at what quality level.

METHODOLOGY

A survey instrument is designed based on the constructs based on the research model. Respondents are asked to indicate the performance of their firm compared to that of their competitors, the level of interaction with suppliers, the extent to which they used the internal process for business process innovation, and the level of relationship with customers. Questions are designed using a seven point Likert scale. Questions about general classification and demographic information on the company are administrated. The survey instrument is pre-tested at meetings with managers/directors at certain numbers of companies. The questionnaire is modified to improve clarity. A series of meeting with experts is followed to measure the content validity and reliability of the instrument. Then, preliminary test is completed with the survey questionnaires.

The survey are sent to individuals identified from Korea Small and Medium Business Administration (Korean SMBA) list of executive officers, directors, presidents, or vise presidents. 660

questionnaires are distributed by email, fax, and visits. Two mailings, two follow-up calls, and a visit are resulted in 284 responses (47.3%). Among them, 192 are considered as valid.

In order to identify CRM characteristics, SERVQUAL model has been adopted. Service quality could be measured by the difference between expectations and perceptions of service quality (Parasuraman, 1985; Zeithaml et al., 1988). A similar approach has been undertaken into the SCM characterization in e-business industry. The survey model with Likert's five point scale is allowed to justifying supply chain environment based on extensive interviews and written surveys. The questionnaire was administered to 192 companies asking about supplier linkage, customer linkage, and internal process linkage an terms of inbound and outbound collaboration.

These 192 represents numbers of related companies those who are currently performing supply chain systems in their companies with e-business transactions. These individuals represented firms operated in a broad range of industries as follows: apparel (n=48, 25%), electronics (n=38, 19.5%), retail distribution (n=36, 18.5%), and wholesale distribution (n=70, 37%).

RESULTS

Developed is a SERVQUAL questionnaire, a multiple-item scale encompassing the five dimensions of service quality, namely tangibles, reliability, responsiveness, empathy, and assurance. Of particular interest were the findings of their other study that internal communication and coordination was a prerequisite for consistent communication to external customers (Parasuraman et al, 1991).

The SERVQUAL model can be transferable to an organization's internal environment based on extensive interviews and written surveys in e-business industry. The questionnaire was administered to 102 e-business customers. Dimensions of service quality with three different types of customer groups are justified using factor analysis. Table 1 shows five dimensions of SERVQUAL and three different customers groups with appropriate measurement. The results indicate all dimensions are significant to e-business customer types.

Table 1. SERVQUAL Dimensions and Different Types of Customers

Service Quality	Customer Group	Mean	SE	F value	P value
Tangibles	Potential	3.78	.34	7.804	.001
	Regular	3.30	.71		
	Premium	3.84	.52		
Reliability	Potential	3.69	.46	17.217	.000
	Regular	2.95	.71		
	Premium	3.76	.52		
Responsiveness	Potential	3.81	.35	26.663	.000
	Regular	2.83	.70		
	Premium	3.77	.51		
Empathy	Potential	3.75	.43	22.005	.000
	Regular	3.00	.72		
	Premium	3.83	.43		
Assurance	Potential	3.67	.51	27.473	.000
	Regular	2.76	.89		
	Premium	3.81	.43		

Table 2 presents SERVQUAL dimensions with four outcome variables with t and p values. In order to identifying CRM characteristics with respective to four outcome variable in e-business industry, five dimensions of SERVQUAL has been justified with purchasing intention, commitment, transition intention, and loyalty. Since no CRM characteristics have been

explored in terms of SERVQUAL aspect, the results provide a significant implication of finding CRM characteristics in e-business industry in Korea.

Table 2. CRM Characteristics with SERVQUAL Dimensions

CRM outcome variables	Service Quality	λ	SE	t	P <
Purchasing Intention	Tangibles	.096	.129	.430	.457
	Reliability	-.015	-.081	-.081	.936
	Responsiveness	.577	2.525	2.524	.012
	Assurance	.224	1.325	1.325	.185
	Empathy	-.098	-.610	-.610	.542
Commitment	Tangibles	.224	2.169	2.169	.030
	Reliability	-.022	-.150	-.150	.881
	Responsiveness	-.253	-1.385	-1.385	.166
	Assurance	.122	.904	.904	.366
	Empathy	.388	3.020	3.020	.003
Transition Intention	Tangibles	-.390	-3.755	-3.755	.000
	Reliability	.295	2.033	2.033	.042
	Responsiveness	-.603	-3.283	-3.283	.001
	Assurance	.042	.307	.307	.759
	Empathy	-.049	-.379	-.379	.705
Loyalty	Tangibles	-.250	-2.662	-2.662	.008
	Reliability	.227	1.736	1.736	.083
	Responsiveness	-.879	-5.309	-5.309	.000
	Assurance	.635	5.175	5.175	.000
	Empathy	.647	5.540	5.540	.000
χ^2	df	GFI	RMR	NFI	CFI
42.88	6	.915	.018	.945	.951

Table 3. SCM Characteristics and Performances

Item	TRAN	LEAD	SPEE	FLEX	RELI
Total logistics cost	**.791**	.290	.233	.182	.205
Per logistics cost	**.776**	.108	.290	.341	.121
Sales/logistics cost	**.764**	.203	.235	.254	.267
Inbound cost	**.738**	.363	.291	.056	.249
Outbound cost	**.628**	.384	.174	.360	.267
Warehouse cost	**.590**	.441	.075	.243	.375
Delivery	.306	**.762**	.233	.252	.201
Supplemental delivery	.367	**.704**	.289	.221	.161
Order fulfillment	.241	**.648**	.365	.279	.288
Customer feedback	.233	.185	**.793**	.287	.176
Cycle time	.283	.258	**.716**	.173	.279
Salesman feedback	.286	.342	**.657**	.160	.339
Inventory ROR	.255	.227	.254	**.813**	.224
Product obsoleteness	.340	.269	.304	**.656**	.306
Inventory Maintenance	.306	.427	.180	**.593**	.310
Claim	.263	.249	.349	.312	**.717**
Damage amounts	.340	.248	.304	.267	**.713**
Product Return	.390	.250	.390	.306	**.607**
Eigenvalue	4.212	2.816	2.715	2.438	2.406
Variances	23.4	15.6	15.1	13.5	13.4
Cronbach α	.938	.878	.865	.885	.913

TRAN: Transportation Cost
LEAD: Lead-time
SPEE: Speed
FLEX: Flexibility
RELI: Reliability

Table 3 shows the related results by factor analysis and reliability with appropriate measurement. Table 3 presents results of factor analysis for identifying SCM characteristics with its outcome variables in e-business industry. Before identifying SCM performance (five performance measures), Cronbach's alpha is

used to assess the reliability of each scale. For each of the item scales, factor analysis is used to reduce the total number of items to a smaller number of underlying factors. Principal components analysis is used to extract factors with more than 1 of eigen values. Varimax rotation is use to facilitate interpretation of the factor matrix. Sampling adequacy measurement tests are examined to validate the use of factor analysis. Values of alpha over 0.7 indicate that all scales can be considered to be reliable.

CONCLUSIONS

E-business operations makes firms unprecedented opportunity in improving business performance. Few studies explored SCM collaboration and performance along with e-business contexts. This study addresses an empirical study of Korean corporations that identifying determinants affecting performance in supply chain and customer management, and providing an insight for planning strategic supplier-customer collaborations. SERVQUAL dimensions with four outcome variables are identified. Five dimensions of SERVQUAL has been justified. Five dependent variables are developed for SCM performance measurement. Discussed are conceptualization and operationalization of performance measures such as cost, lead-time, feedback, inventory, and reliability performance. This study refines more appropriate model for measuring supplier-customer performance.

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