JOURNAL OF INTERNATIONAL LOGISTICS AND TRADE
Volume 6, Number 2, December 2008, pp.49~67

A study on establishing a strategy of supply chain management: focusing on Korean automobile industry

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Abstract

The purpose of this paper is to present a new strategic framework of Supply Chain Management (SCM) in the automobile industry. For our purpose, we first had studied about the structure of relationship between supplier and buyer in Korean automobile industry. With this study, we searched for factors which compose a strategy of SCM, and whether or not the companies' performance that are influenced by specific SCM strategy factors. Of course, our study based on existing researches, especially Cox et al.(1995) and Venkatraman et al.(1992), but the existing researches is differentiated in this paper that is treated several power factors as resource, value, environment and relation. So, results of our paper are what a good strategy of SCM composed by these factors and how to adopt this strategy on global logistics. And our methodology has some using of statistics method by SPSS 14(v) such as factor analysis, reliability analysis, and SEM(Structural Equation Model) with AMOS.

Keywords: *Supply Chain Management, Strategy, Power, Value, Environments.*

1. Introduction

During the 1990s, Supply Chain Management(SCM) has become one of the key issues in the manufacturing and logistics, and tremendous changes have occurred in supplier management practice.

Ahn et al.(1999) suggest that world-class manufacturers tend to purchase system parts or sub-

Submission Date: 20/05/2008 Revision Date: 01/12/2008 Acceptance Date: 10/12/2008

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assemblies form outside suppliers rather than make them internally. This results in suppliers obtaining more control over quality, cost, and delivery, and they suggested an importance of supply chain management strategy between supplier and buyer.

Further, several companies have significantly improved their performances by better coordinating the activities of individual members of their supply chain. Supply chain management is a set of practices aimed at managing and coordinating the supply chain form raw material suppliers to the ultimate customers(Heikkila, 2002).

In this view-point, it is increasing the importance of SCM strategy between supplier and buyer companies. And a number of former studies were which indicate the competitive advantages and importance of linking supply chain to overall business strategy. They present many type of SCM strategy and structure of strategy, and described the related theory such as a transaction cost, power, social-relationship, and resource dependency, so on.

Another researchers proposed that strategic supply chain management are structured by specific factors such as power-related factors(Cox, 1997), specific assets(Dyer, 1982; Williamson 1985), value (Cooper et al., 1993; Porter, 1981) and so on. But their studies have a limitation which strategy is consist with 1or 2 factors. So our study has a unique method which is finding structure of SCM strategy by using simultaneous several influence factors on existing researches.

This paper is organized as follows. In section 1, we introduce about objects, necessity and unique of our study. Section 2 describes the related studies about supply chain and supply chain management strategy. In section 3 and section 4, we explained the research methodology and data analysis. Finally, section 5 is composed with result of our study.

2. Related studies

2.1 Definition of supply chain and supply chain management

In the past years, various definitions of a supply chain have been offered on many studies as the concept has gained popularity, but the APICS's definition is a clear and closer. The APICS Dictionary describes the supply chain as:

- the processes from the initial raw materials to the ultimate consumption of the finished product linking across supplier user companies; and
- the functions within and outside a company that enable the value chain to make products and provide services to the customer (Cox et al., 1995).

Another source defines supply chain as, the network of entities through which material flows. Those entities may include suppliers, carriers, manufacturing sites, distribution centers, retailers, and customers(Lummus and Alber, 1997). The Supply Chain Council(1997) uses the definition: "The supply chain – a term increasingly used by logistics professionals– encompasses every effort involved in producing and delivering a final product, from the supplier's supplier to the customer's

customer. Four basic processes – plan, source, make, deliver – broadly define these efforts, which include managing supply and demand, sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, and delivery to the customer." Quinn (1997) defines the supply chain as "all of those activities associated with moving goods from the raw-materials stage through to the end user. This includes sourcing and procurement, production scheduling, order processing, inventory management, transportation, warehousing, and customer service. Importantly, it also embodies the information systems so necessary to monitor all of those activities."

In addition to defining the supply chain, several authors have further defined the concept of supply chain management. As defined by Ellram and Cooper (1993), supply chain management is "an integrating philosophy to manage the total flow of a distribution channel from supplier to ultimate customer".

Monczka and Morgan (1997) state that "integrated supply chain management is about going from the external customer and then managing all the processes that are needed to provide the customer with value in a horizontal way". They believe that supply chains, not firms, compete and that those who will be the strongest competitors are those that "can provide management and leadership to the fully integrated supply chain including external customer as well as prime suppliers, their suppliers, and their suppliers' suppliers".

From these definitions, a summary definition of the supply chain can be stated as: all the activities involved in delivering a product from raw material through to the customer including sourcing raw materials and parts, manufacturing and assembly, warehousing and inventory tracking, order entry and order management, distribution across all channels, delivery to the customer, and the information systems necessary to monitor all of these activities. Supply chain management coordinates and integrates all of these activities into a seamless process. It links all of the partners in the chain including departments within an organization and the external partners including suppliers, carriers, third party companies, and information systems providers. Managers in companies across the supply chain take an interest in the success of other companies. They work together to make the whole supply chain competitive. They have the facts about the market, they know a lot about competition, and they coordinate their activities with those of their trading partners. It encompasses the processes necessary to create, source, make to, and to deliver to demand. They use technology to gather information on market demands and exchange information between organizations.

A key point in supply chain management is that the entire process must be viewed as one system. Any inefficiencies incurred across the supply chain (suppliers, manufacturing plants, warehouses, customers, etc.) must be assessed to determine the true capabilities of the process.

2.2 Supply chain management and strategy

When companies decide to become involved in any supply chain they have to make decisions about how they will control and manage the primary supply chain itself(Cox, 1999). Hence, the supply chain improvements described indicate that supply chain management has the potential to improve a firm's competitiveness, and encourages management of processes across departments.

Cox(1999) stated that supply chain strategy can be viewed as the pattern of decisions related to sourcing product, capacity planning, conversion of finished product, deployment of finished product, demand management and communication, and delivery. Linking supply chain strategy to the business strategy involves defining the key business processes involved in producing a company's product or service. So supply chain management can be utilized to be a point of differentiation for a company.

And he said that "excellence on a certain dimension in product position can provide a competitive marketing opportunity, but shortfalls in providing this dimension by the supply chain can eliminate this advantage. Managers must define a working relationship with customers and put themselves in a position to deliver customer value".

All components of the supply chain must have the capability to meet strategic objectives. Companies must evaluate the effectiveness of the supply chain strategy using a new set of measures. Typical rewards aimed at improving performance of functions or departments must be revised to strive to improve supply chain performance overall. By tying the supply chain strategy to the overall company strategy, the objectives become process objectives rather than functional. In strategically, companies have to be more specialized and search for suppliers who can provide low cost, quality materials rather than competitor's own. It becomes critical for companies to manage the entire network of supply to optimize overall performance. These organizations have realized that whenever a company deals with another company that performs the next phase of the supply chain, both stand to benefit from the other's success.

Advanced Manufacturing Research, a Boston-based consulting firm, developed a supply chain model which emphasizes material and information flow between manufacturers and their trading partners (Davis, 1995). They believe the changes required by management are due to the following changes in how manufacturers are doing business:

- Greater sharing of information between vendors and customers.
- Horizontal business processes replacing vertical departmental functions.
- Shift from mass production to customized products.
- Increased reliance on purchased materials and outside processing with a simultaneous reduction in the number of suppliers.
- Greater emphasis on organizational and process flexibility.
- Necessity to coordinate processes across many sites.
- Employee empowerment and the need for rules-based real time decision support systems.
- Competitive pressure to introduce new products more quickly. Companies are streamlining all operations and minimizing the time-to-customer for their products.

For these reasons, expertly managing the supply chain has become critical for most companies. As Ralph Dyer, vice president of product supply/customer service at Procter and Gamble put it, "Winning in the marketplace of the 1990s is going to require a far different kind of relationship - one that recognizes that the ultimate winners will be those who understand the interdependence of retailer/manufacturer business systems and who work together to exploit opportunities to deliver superior consumer value" (Dyer, 1994). Managers in companies across the

supply chain take an interest in the success of the other companies. They work together to make the whole supply chain competitive.

They have the facts about the market, they know a lot about competition, and they coordinate their activities with those of their trading partners. They use technology to gather information on market demands and exchange information between organizations. Critical to managing the supply chain is managing the link between each node within the chain to synchronize the entire supply chain.

In recognizing that there is a strategic as well as an operational way of thinking about supply chains, it is essential that practitioners recognize that what is appropriate in one context may be inappropriate in another (Cox, 1997b; 1998; 1999). Earlier it was argued that there are serious intellectual flaws in some of the lean thinking literature. Most of these flaws relate to the failure by its proponents to understand that the appropriateness of the use of this, or any other, approach must be based on an understanding of what business is actually about in theory.

Essentially business is about appropriating value for oneself; it is not about passing value to customers unless circumstances decree that this is the only (and it is normally the least desirable) option available to a company in order for it to sustain itself in business. In fact the theoretical ideal in business (from an entrepreneurial perspective) is to be able to put oneself in a position where neither customers, employees, competitors or suppliers can leverage value from you, while putting yourself in a position to leverage all of them. It has to be recognized, of course, that achieving such an idyllic business situation is rare and exceptional. Despite this, it is important to recognize that if one was in this position then - assuming that customers value what we provide for them - we would be in a situation of power over all others in our supply chain relationships. This must be the ideal position to be in, yet the concept of power is rarely discussed in supply chain writing - except to deny it as important (Williamson, 1995), or to argue that power should not be used because lean approaches should be based on equity, trust and openness.

Both of these views are misguided. This is because most writers operate with an a theoretical understanding of the causes of sustainable business success, and focus their analysis on the description of what companies do, rather than have a theoretical understanding of what it is that allows companies to be successful in the first place. It can be argued that companies are only successful if they possess power over something or someone.

This is because only by having the ability to appropriate value from relationships with others - whether these are with customers, employees or suppliers - can business success be sustained (Cox, 1997a). There must, therefore, be objective conflicts of interest between vertical participants in supply chains, just as there are between those competing horizontally in the markets that form around specific supply chain resources. This is because everyone in the chain is seeking to appropriate value for themselves from participation and, assuming economically rational behaviors, must wish to appropriate more of the value for themselves if they are able so to do. Because certain players in the chain recognize that they have limited power to appropriate value from others, is not the same as saying that they would not seek to leverage more value for themselves if circumstances allowed them to do so.

Beside, another many researchers have been studied about the SCM strategy and structure. And we digested about the previous studies of SCM strategy theory as Table 1. There are SCM

strategies such as transaction costs, resource dependency, political economic, power-political and social exchange theory. And there are specific factors such as resource, assets, value, relation and environments.

Table 1
Summary of literature review about theories and factors of SCM strategy

Researcher	Theory	Specific factors
Bensaou and Venkatraman(1995), Bensaou(1997)	- Transaction costs - Resource dependency - Political economy	-Resource -Assets -Value
Forrester(1961), Sterman(1989), Bakos(1991), Towill et al(1992), Lee et al.(1997), Dyer(1997), Levy(1997), Fisher(1997), Vollmann et al.(1997), Johnston et al.(2004)	- Transaction costs	-Assets -Resource
Lado et al(1997)	- Power-political	-Relationship
Moody(1993), Vollmann et al.(1996), Lambert et al.(1996), Miller and Shamise(1996), Dyer(1997), Cooper et al.(1997), Doz and Jamel(1998), Monczka et al. Vollmann(2000), Heikkila(2002)	- Power-political - Social-exchange	- Environments - Resource
Jap(1999), Alter(2002)	- Resource dependency	- Resource

However, our study has a unique method which is finding structure of SCM strategy by using simultaneous several influence factors on existing researches.

3. Research methodology

This study was conducted with vendor companies on major automobile company such as Hyundai, Kia, GM-Daewoo, Renault-Samsung in Korea. Our research methodology is used by survey method and the target companies were consistent with 102 at Seoul and Inchon area in Korea.

At first, we selected the target companies which have been relationship with major automobile company for a long time as at least over 5 years. In the second, they are participated on global competitions or co-work with major company. The reason is to keep the homogeneity of samples. At third stage, we made a questioner which was consisted with SCM strategic 4 parts as resource, relation, environments and value. Table 2. represent the items of SCM strategy and performance variables, item contents and measuring scales. These items are conducted from the former

researchers' performance (Show as Table 1).

Table 2
Items and scale of SCM strategy variables

Item		Content	Scale
Resource	R1	- degree of specific raw materials	Likert 5 points
	R2	- degree of specific location	
	R3	- different human resource	
	R4	- different product processing method	
	R5	- different manufacturing technology	
	R6	- speedy delivery time	
	R7	- flexible manufacturing system	
	R8	- unique network system	
	R9	- plentiful human power	
	R10	- low cost parts	
Relation	Rel1	- amount of sharing information	
	Rel2	- degree of trust	
	Rel3	- frequent change system	
	Rel4	- harmonious communication	
	Rel5	- similar corporate culture	
	Rel6	- feeling as a family	
	Rel7	- longtime trade contract	
	Rel8	- trust of pay police	
Environments	E1	- degree of response on order quantity	
	E2	- degree of change in demand	
	E3	- degree of global environmental effects	
	E4	- degree of technical change	
	E6	- degree of participants with partners	
	E7	- degree of high coordination	
	E8	- degree of common goals	
	E9	- degree of long cycle time	
	E10	- degree of high service requirements	
	E11	- degree of distribution cost	
	E12	- degree of high cost on supply chain	
Value	V1	- information related products	
	V2	- support the management	
	V3	- support the technology management	
	V4	- sharing the profitability	
	V5	- sharing the reduction of inventory cost	
	V6	- sharing the know-how	

	V7	- reduction ratio of repair work	
	V8	- sharing the process development	
	V9	- sharing the partnership	
	V10	- sharing the new technology	
	V11	- sharing the network system	
Performance	P1	- faster delivery time	
	P2	- reduced transaction cost	
	P3	- reduce inventory	
	P4	- greater profitability	
	P5	- increased production efficiency	
	P6	- improved quality	
	P7	- reduced budget/investment	
	C1	- increased response on market change	
	C2	- increased sharing information about customer	
	C3	- satisfied delivery time	
	C4	- improved end-user service	

4. Data analysis and results

In existing research, the two-step approach developed by Anderson and Gerbing(1988) was employed to assess the factor structure of the measure and theoretical relationship. This procedure affords the opportunity to assess the factor structural parameters for multiple samples(Hair, 1988; Anderson, 1988). Our research model is following as Figure 1.

4.1 Reliability and validity analysis

We examined the dimensionality of the survey instrument that we adapted for SCM strategy in this section. We performed exploratory[1] factor analysis and presented the result on Table 3.

The exploratory factor analytic approach due to the advantage of, it does not set any priori constraints on the estimation of components, to the interpretation of the solution, the concept correctly through different number of factor solutions. It is important to continue and examine the analysis of data through factor technique because it can refine the tools already developed over the quality assurance processes.

[1] The exploratory factor analysis was conducted using principal axis factoring as the factor extraction method and the Oblimin rotation with Kaiser normalization as the rotation method.

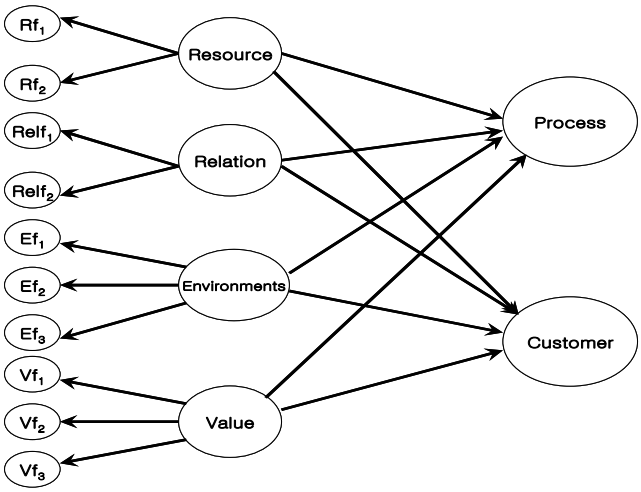


Figure 1. The covariance structural equation modeling(SEM) of the research model

Table 3
The results of reliability and validity analysis

Factor		Item	Factor score	Eigen value	Cronbach's α
Resource	Rf1	R4	.813	3.386	.848
		R5	.794		
		R3	.702		
		R6	.680		
		R7	.656		
		R8	.562		
	Rf2	R9	.879	2.648	.769
		R1	.803		
		R10	.602		
		R2	.530		
Relation	Relf1	Rel4	.905	4.148	.881
		Rel5	.879		
		Rel2	.732		
		Rel1	.675		
		Rel6	.671		
	Relf2	Rel7	.951	1.012	.810
		Rel8	.764		
Environments	Ef1	E11	.865	4.947	.881

		E12	.860		
		E10	.740		
		E9	.651		
	Ef2	E7	.866	1.360	.782
		E8	.791		
		E6	.628		
	Ef3	E3	.774	1.267	.691
		E4	.685		
		E1	.633		
		E2	.608		
Value	Vf1	V2	.905	5.108	.829
		V1	.806		
		V3	.718		
		V6	.582		
	Vf2	V10	.872	1.394	.826
		V9	.834		
		V11	.697		
		V8	.631		
	Vf3	V4	.862	1.010	.690
		V7	.610		
		V5	.607		
Performance	Process	P2	.811	5.432	.908
		P3	.796		
		P1	.784		
		P4	.756		
		P6	.718		
		P5	.714		
		P7	.638		
	Customer	C4	.807	1.078	.860
		C2	.801		
		C3	.767		
		C1	.723		

Note: Factor analysis - principle axis factoring and Oblimin rotation with Kaiser normalization; factor loadings below 0.5 are not shown; primary loading is shown in bold.

As shown in Table 3, values of Cronbach's α, which is measuring average inter-item correlation among the items, i.e., resource, relation, environments, value and performance. The Cronbach's α coefficients range from 0.690 to 0.908, which are higher than the cutoff value of 0.600 suggested in the literature(Nunnally and Bernstein, 1994). The Cronbach's α is coefficient of reliability(or consistency), shows high internal validity.

In this result, the resource was divided by 2 factors as Rf1 and Rf2. The Rf1 factor is consist with R3, R4, R5, R6, R7, and R8. Hence, Rf1 means the manufacturing goal resource. RF 2 means a specific resource. Relf1 is family relationship, Relf2 is contract relationship. The Environment variables are consist with 11 variables(except E5 variable) and extract 3 factors such as Ef1, Ef2 and Ef3. Ef1 means a rapidly change of logistics environment, Ef2 is a consensus community environments and Ef3 is a similar manufacturing environment. Vf1 means a buyer's ability which suppliers want to be supported, Vf2 is a system-ability, and Vf3 is a ability of cost reduction.

4.2 First-order factor analysis : for sub-factors of the SCM strategic factors

After exploratory factor analysis was analyses, the items were executed by confirmatory factor analysis using AMOS 6.0 in order to use measure of four factors. Since the value of composite reliability and average variance extracted 10 factors are above than 0.7 and 0.5, respectively(Hair et al., 1998), the reliability and uni-dimensionality of the measures are confirmed(Table 4).

Next, construct validity was tested. Construct validity can be broken down into two sub-categories; convergent validity and discriminant validity. Convergent validity is the actual general agreement among ratings, gathered independently of one another, where measures should be theoretically related. In Table 4., the value of p for chi-square of model is above the minimum level of 0.05, and GFI, RMESEA, IFI, TLI, and CFI are in acceptable ranges, which provides evidence of having measures for one construct overlap the conceptual territory of another construct. This is assessed by comparing the variance shared by constructs, as measure by squared correlation between them with the average variance extracted(AVE) by each construct's measurement items. Average variance extracted by the measure of each factor is larger than squared correlation of that factor's measure with all measures of other factors in the model(Fornell and Larcker, 1981). In other words, the latent construct should be demonstrably closer to its measurement items than to any other construct. In Table 5., for this model, in all cases, the variance shared by constructs was much less than the AVE for any one of the construct's measurement items. Thus, we can conclude that the factors exhibit discriminant validity.

Table 4
Result of confirmatory factor analysis of the SCM strategic factors

Factor	Sub-Factor	Measurements			Estimate	t-value	CR[a]	AVE[b]
		Init.	Final					
Resource	Rf1	6	r8	4	0.863	-	0.831	0.624
			r7		0.728	8.631		
			r6		0.745	7.889		
			r4		0.622	7.205		
	Rf2	4	r10	4	0.707	-	0.794	0.579
			r9		0.778	7.327		
			r2		0.63	6.07		
			r1		0.681	6.623		
Relation	Relf1	5	rel6	5	0.669	-	0.86	0.624
			rel5		0.771	8.794		
			rel4		0.815	7.723		
			rel2		0.734	6.936		
			rel1		0.72	6.683		
	Relf2	2	rel8	2	0.956	-	0.816	0.73
			rel7		0.69	7.979		
Environment	Ef1	4	e12	4	0.799	-	0.892	0.717
			e11		0.874	9.769		
			e10		0.916	8.573		
			e9		0.684	7.464		
	Ef2	3	e6	3	0.792	7.966	0.775	0.611
			e8		0.617	6.199		
			e5		0.776	-		
	Ef3	4	e3	2	0.761	-	0.641	0.566
			e2		0.609	6.404		
Value	Vf1	4	v6	3	0.638	-	0.783	0.621
			v3		0.757	6.423		
			v2		0.817	7.094		
	Vf2	4	v11	4	0.792	-	0.855	0.657
			v10		0.833	8.531		
			v9		0.839	7.056		
			v8		0.609	6.475		
	Vf3	3	v7	2	0.707	-	0.651	0.574
			v5		0.683	6.284		

χ^2 =429.33, df=408, p=0.224, GFI=0.815, RMSEA=0.023, IFI=0.990 , TLI=0.986, CFI=0.989

Notes: a. Composite Reliability
b. Average Variance Extracted

Table 5
Correlation matrix and AVE[a] in the SCM strategic factors

	Rf1	Rf2	Relf1	Relf2	Ef1	Ff2	Ef3	Vf1	Vf2	Vf3
Rf1	0.624									
Rf2	.623**	0.579								
Relf1	.392**	.451**	0.624							
Relf2	.328**	.458**	.566**	0.74						
Ef1	.479**	.502**	.440**	.495**	0.717					
Ef2	.377**	.389**	.542**	.435**	.444**	0.611				
Ef3	.378**	.345**	.313**	.575**	.617**	.510**	0.566			
Vf1	.482**	.446**	.457**	.290**	.297**	.421**	.208**	0.621		
Vf2	.491**	.451**	.528**	.315**	.329**	.418**	.305**	.557**	0.657	
Vf3	.506**	.492**	.490**	.441**	.372**	.542**	.318**	.610**	.542**	0.574

Note: a. AVE is in italics on the Diagonal
**: correlations is significant at $p<0.01$, *: correlations is significant at $p<0.05$

4.3 Second-order factor analysis

First of all, in order to asses the reliability and validity of all the exogenous constructs, we performed second-order factor analysis. However, since no measure in four factors(resource, relation, environment, value), second-factor, we used two-step approach using the average of the measure scores for each sub-factors confirmed at first-order factor analysis(Anderson and Gerbing, 1988).

The last time, confirmatory factor analysis was executed with all the latent constructs of this study. The results are noted below and in Table 6. and Table 7. On the whole, model fit indices indicate an acceptable fit of the measurement model to the data considering to given the small sample size.

Table 6
Result of confirmatory factor analysis of the SCM strategic factors

	Factor	Measurement	Estimate	t	CR[a]	AVE[b]
Exogenous Variables	Resource	Rf2	0.753	-	0.772	0.681
		Rf1	0.832	7.41		
	Relation	Relf2	0.709	-	0.74	0.65
		Relf1	0.821	7.661		
	Environment	Ef1	0.732	6.803	0.759	0.594
		Ef3	0.723	6.439		
		Ef2	0.691	-		

	Value	Vf1	0.755	7.108	0.804	0.748
		Vf3	0.769	7.255		
		Vf2	0.736	-		
Endogenous Variables	Process Performance	p7	0.748	-	0.903	0.639
		p6	0.782	8.193		
		p5	0.82	8.645		
		p4	0.775	8.208		
		p3	0.78	8.269		
		p2	0.66	6.808		
		p1	0.721	7.482		
	Customer Performance	c4	0.826	-	0.887	0.707
		c3	0.88	10.756		
		c2	0.745	8.545		
		c1	0.801	9.317		
$\chi 2$=166.09, df=155, p=0.257, GFI=0.872, RMSEA=0.027, IFI=0.992 , TLI=0.989, CFI=0.992						

Note: a. Composite Reliability
b. Average Variance Extracted

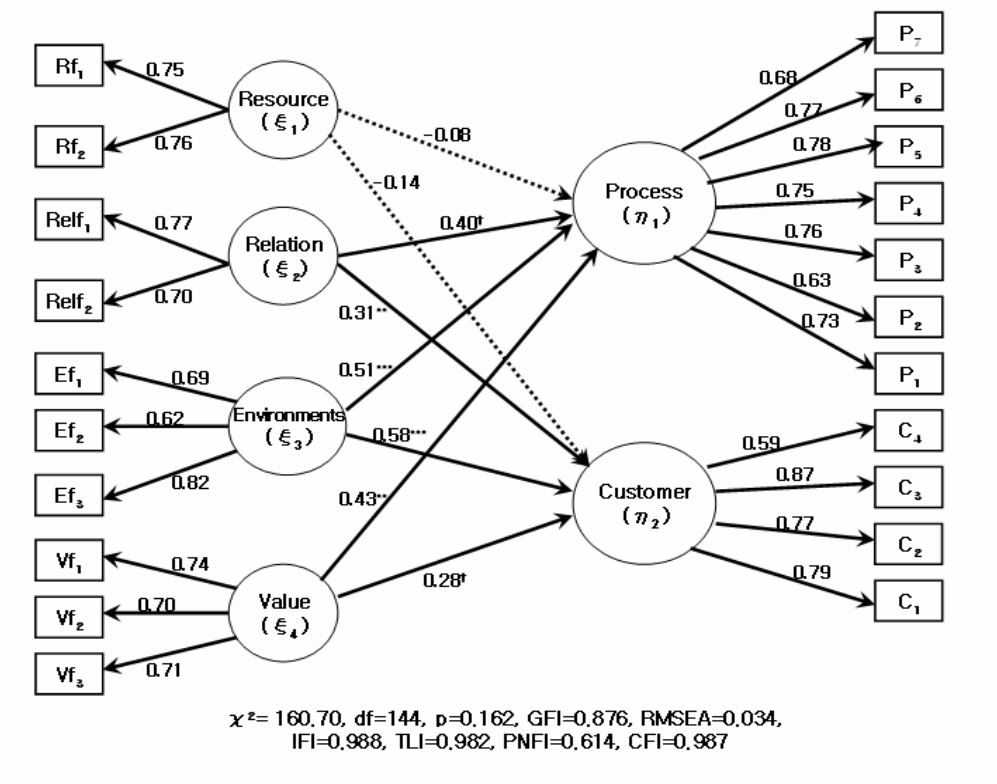
Table 7
Correlation matrix and AVE[a] in all the latent constructs

	(1)	(2)	(3)	(4)	(5)	(6)
Resource(1)	0.681					
Relation(2)	.513**	0.65				
Environment(3)	.558**	.641**	0.594			
Value(4)	.627**	.555**	.509**	0.748		
Process(5)	.524**	.660**	.557**	.547**	0.639	
Customer(6)	.478**	.563**	.485**	.574**	.672**	0.707

Note a: AVE are in italics on the Diagonal
**: correlations is significant at p<0.01, *: correlations is significant at p<0.05

4.4 Result of SEM analysis

To assess relationship among all the latent constructs, we used AMOS 6.0. Structural equation modeling(SEM) is a multivariate statistical tool that essentially combines multiple regression and factor analysis to simultaneously test a series of dependent relationships(Hair et al., 1992).



Note: a. standardized estimate, † :significant at p<0.1,
: correlations is significant at p<0.01, *: correlations is significant at p<0.001

Figure 2. Result of SEM

The results of the test of the overall fit of the model in Fig-1 are provides below and in table 8. The structural model was estimated by Maximum Likelihood using the AMOS 6.0. The results indicate that the proposed structural model could be an acceptable fit regarding to small size sampling of this research. The final fit statistics for the proposed model, presented in Table 8. is χ^2=160.70, with df=144 (p=0.162); GFI=0.876 , IFI=0.988 ; TLI=0.982 ; CFI=0.987. Overall goodness-of-fit indices an acceptable fit of the study and small-size sampling of this research. Many researchers note that the needs to multiple fit criteria are presented to rule out measuring biases inherent in the various measures(Hair et al., 1998), thus several are presented.

Bentler and Bonett's Non-normed Index(TLI) and Bentler's Comparative Fit Indices(CFI) are both above the desired 0.9 level(Hair et al., 1998) and thus indicate good fit. James et al.(1982) proposed the PNFI(parsimonious normed fit index) can be available to small size sampling relatively. The PNFI value of 0.614 is above the desired 0.60 level and thus indicates a good fit. The ration of χ^2 to degrees of freedom is 1.166(=160.70/144), which is below the recommended 3.0 threshold(Hair et al., 1998), which indicates a good fit.

Table 8
Correlation matrix and AVE[a] in all the latent constructs

Path			Estimate[a]	C.R.	P
Process (η_1)	←	resource (ξ_1)	-0.078	-0.811	0.417
	←	relation (ξ_2)	0.398	1.903†	0.057
	←	Environment (ξ_3)	0.507	4.213***	***
	←	value (ξ_4)	0.428	3.447***	***
Customer(η_2)	←	resource (ξ_1)	-0.136	-0.976	0.329
	←	relation (ξ_2)	0.308	2.916**	0.004
	←	Environment (ξ_3)	0.581	3.915***	***
	←	value (ξ_4)	0.28	1.811†	0.07

χ^2=160.70, df=144, p=0.162, GFI=0.876, RMSEA=0.034, IFI=0.988 , TLI=0.982, PNFI=0.614 CFI=0.987

Note: a. standardized estimate, † :significant at p<0.1,
: correlations is significant at p<0.01, *: correlations is significant at p<0.001

5. Conclusions and limitation

This paper defined the concepts of supply chain and supply chain management and several supply chain initiatives at companies were described which indicate the competitive advantages and importance of linking supply chain to overall business strategy.

Based on the empirical results of this study, at first, we achieved 10 factors about structure of

strategic SCM by using 41 variables. These 10 factors are consist with 2 resource factors (manufacturing goal factor and specific assets factor), 2 relationship factors(family relationship and contract relationship factor), 3 environmental factors(rapidly change of logistics, consensus community, and similar manufacturing environments), and 3 value factors(support ability, system-ability, cost reduction ability.

At second, we could divide two performance factors by using 12 variables. One of them is process performance between supplier and buyer, and anther is customer performance with customer satisfaction.

Third finding is that 3 factors -relation, environment, and value- influences significantly to performances of SCM strategy such as processing and customer's satisfaction, but resource factor isn't.

In fourth result of this study, we make clear to be differentiated factors which influence to strategic SCM structure. Exactly, the value factor caused more effect than the relation factor in the process-oriented SCM strategy, and there are appeared opposite result in customer-oriented. This result presented to have a different strategic structure by SCM strategy types.

However, this study has some weakness of research methodology such as limitation of geographic data, focused vendor companies in Korean automobile industry. Especially, our research has limitation that did not find right cause about the resources affects significant process and customer performance up to now.

Furthermore, this study could not present factors what influence to each SCM performance by SCM strategy types. So, we are preparing other research in this point and expect the related one's studies.

Acknowledgements

This work was supported by the Korea Research Foundation Grant funded by the Korean Government(MOEHRD) (KRF-2005-005-J10201). This paper was presented by proceedings on 2008 international Conference on Shipping, Port & Logistics Management at 28th March, and was corrected.

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