

## The Effect of Supply Chain Management Activities and Marketing Capabilities on the Performance of Apparel Firms

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### 의류기업의 공급사슬관리 기반활동과 마케팅 역량이 업무성과에 미치는 영향

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#### Abstract

The purpose of this research is to examine the level of SCM activity, marketing capability, and firm performance for apparel firms, and to investigate the effect of SCM activities and marketing capabilities for firm performance improvement. This study surveyed domestic apparel manufacturing brands that distribute products nationwide. The data was collected through questionnaires sent to managers or executives in large and middle manufacturing corporations among Korea's listed and registered corporations. The data collection has been carried out from November 10 until December 11, 2006. The questionnaires were transmitted by individual visit, fax, and mail. A total of 98 completed responses were returned, three incomplete responses were discarded. The results were as follows: First, SCM activity was classified into 3 dimensions: structural, logistical, and technological factor. Three dimensions of marketing capability were identified with differentiation, cost-leadership, and operational factor. Firm performance was classified into three dimensions: financial, productivity, and customer satisfaction factor. Second, result of analyzing effects of SCM activities for firm performance improvement, it was found that the improvement of technological activities affected acquirement of financial, productivity, and customer satisfaction performs. Structural activities affected factor of productivity performs. Third, result of analyzing effects of marketing capabilities for firm performance improvement, improvement of differentiation capabilities affected acquirement of financial, customer satisfaction performs. And the improvement of operational capability affected acquirement of financial performs and improvement of cost-leadership capability affected factor of productivity performs.

**Key words:** Supply chain management activity, Marketing capability, Firm performance; 공급사슬관리 기반활동, 마케팅 역량, 업무성과

### I. Introduction

The apparel industry is characterized by fickle consumer preferences, very short product life cycles,

numerous competitors, low cost global manufacturing, and rapid technological change. In such an environment, apparel manufacturers must adopt SCM (Supply Chain Management) as a new business strategy to improve competitive advantage. SCM deals with the control of material, information, and finan-

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cial flows, the structural and infra-structural processes relating to the transformation of the materials and the delivery of the products through appropriate channels to customers so as to maximize customer value and satisfaction. SCM seeks to enhance competitive advantage by closely integrating the internal functions within a company (e.g., marketing, product design, and manufacturing) and effectively linking them with the external operations of suppliers, customers, and other channel members. The benefit of SCM can be attained through efficient linkage among various SCM activities, and the linkage should be focus on the effective construction and operation of various marketing capabilities for integrated supply chain. This means that a firm that is pursuing the effective construction of SCM activities needs to pay attention to each supply chain members activity and marketing capability.

Thus, this research examined three issues in SCM for apparel firm. The first purpose of this study is to investigate the levels of SCM activities, marketing capabilities, and firm performances of apparel manufacturers. The second purpose is to examine effects of SCM activity levels for firm performance improvement. And also, to investigate effects of marketing capability levels for firm performance improvement.

## II. Literature Reviews

### 1. Supply Chain Management Activity and Marketing Capability

When the researches that focus on the firms' SCM activities that purport to execute effective SCM are examined, Ross(1997) points out information and technology development and application as a strategic tool for SCM, and claims that this tool in turn enables optimization of performance by forming organization design and relationship of cooperation. In other words, cutting edge technologies such as EDI and POS are important considerations for the firms' performance and design of SCM. Tyndall et al.(1999) emphasizes use of information technology for the success of SCM. According to him, development of the technology that supports SCP(Supply

Chain Planning) and SCE(Supply Chain Execution) are crucial to manage information and logistics flow to the end.

Kim(2000) emphasized CEO's awareness and support, degree of information sharing, IT, opinion communication system, exchange of opinion, fault within the organization and other activity level aspects for the domestic import/export companies' effective logistics management when it comes to the SCM activity factors. Kwak et al.(2002) classifies technological factors among SCM activities into six main levels; logistics center operation capability, inventory management technique, location selection technique, customer support technique, degree of logistics mechanization, and customer response technique, to study the effect on the logistics cost and customer service performance. The research shows that the degree of logistics mechanization significantly affect decrease in logistics cost whereas inventory management technique, location selection technique, and customer support technique also significantly influence while characterized by high ability to explain increased customer service. Park and Lee(2004) reports that there are changes depending on the factor for business infra support, support for migration to the information era and usage factor, factor for support of SCM service firms' information migration capability when it comes to the pursuit of SCM strategy. The results of the research show that the factors that influence increased work efficiency are support for business infra, support for and use of information migration, and factor for service support. As for the factors that influence strengthened partnership are support for business infra, support for and use of information migration, operation and support for SCM, and factor for service support. This result shows once again that it is necessary to emphasize the importance of business infra and technology for information, which are the basic factors for SCM activities in order to achieve firms' goals through SCM.

Lee and Kincade(2003) suggest six aspects of SCM such as partnership, information technology, management flexibility, performance measurement, execution of management, and identification of char-

acteristics in demand. Among these, information technology factors related to SCM activities pertain to degree of communication via computer and degree of EDI usage whereas management execution factors are composed of the base activities that manifest improvement in production system, improvement of educational contents, and degree of improvement when it comes to employees' authority. The level of SCM activities composed based upon these supply chain activities manifested statistically significant difference depending on the firms' characteristics that include product's fashion, delivery of the textile supplier, relationship between textile supplier and retailer, relative size of the retailer.

Lee(2001) conducted research on the domestic apparel firms' level of adopting SCM, and compared the degree of adoption by firms' characteristics(revenue size, product scope) for analysis. Moreover, QRS, which is one of the logistics management techniques and transport, loading and unloading, storage, packaging and information on logistics, which are logistics infra system elements, were subjected to empirical analysis to study their effect on the logistics performance. To study the degree of SCM adoption and its availability(or non-availability), eight elements pertaining to the logistics improvement activities were studied including degree of management's awareness towards SCM and logistics, and logistics service provider, supplier, degree of strategic alliance with distributors, degree of POS information sharing between supplier and distributor, level of logistics performance measurement(rate of products delivered on time, rate of orders fulfilled, share of out-of-stock products, accuracy of invoice etc.), introduction of bar-coding, degree of EDI adoption, cross-docking, and computer assisted order.

The results of the research show that there is a difference in the degree of adopting SCM depending on the size of apparel firms, and product range. Information sharing and degree of production plan execution, which are the technological factors of QR, which is one of the SCM and logistics management techniques that are executed by the apparel firms do influence increased customer service positively. Moreover, information technology, which is one of the sup-

ply chain activities, significantly influences the degree of logistics cost reduction. Accordingly, the research claims that it is critical to develop measures for maximizing the level of QR technology and logistics infra system execution for the successful management strategy innovation of the apparel firms by adopting SCM and QR technology as a logistics management technique. As examined above, use of various SCM activities that support SCM execution is critical in order for firms to execute effective SCM. Accordingly, researches should be conducted to identify the effective relationship between apparel firms and the components/members of the supply chain, and to identify the elements of supply chain activities that are more appropriate for the firms' characteristics.

When the researches that address marketing capability amidst the situation of supply chain are examined, Bowersox and Daugherty(1995) claim that the firms' general competition strategy in the supply chain can be summarized by the strategy of minimizing production cost, differentiation oriented strategy, and customer service oriented strategy. According to them, the firms that execute the strategy to minimize production cost tend to have centralized internal decision-making structure in order to maximize the ability to control production cost. Moreover, these firms emphasize a system of cooperation whereby different functions with the firm are unified. In other words, they are characterized by standardizing official rules and procedures. Meanwhile, the firms that are focused on the strategy of guaranteeing product quality and optimizing value add centered on differentiation are interested in building and sustaining relations with the selected outside partners. In other words, they tend to build a system of cooperation with outside partners and to increase the level of information sharing in order to decrease uncertainty and risk in the market, and to pursue after overall profitability and quality increase. Lastly, the firms that are focused on flexibility and customer service emphasize system of close cooperation with their partners, and seek integration with the outside suppliers through precise customization of products and services, and integration with the outside customers.

The purpose of this strategy is to maximize response to customer requirements. Therefore, it is characterized by the highest level of strategic alliance among companies. The companies that prioritize this strategic viewpoint tend to pursue after long-term strategic alliance with the partners in the supply chain.

Next, the research conducted by Kim(2004) who emphasized the strategic role of the integrated supply chain, analyzes firms' company-wide competitive capability from the point of view of the following four factors; superior capability in terms of production cost, customer service, marketing technology and differentiation. When the details on each factor is examined in detail, superior production cost capability refers to the ability to compete on low price, ability to control product quality during product activities, ability to reduce production cost during process, ability to secure raw materials steadily, and ability to innovate production process. Meanwhile, customer service capability refers to the ability to supply products of consistent quality, ability to supply product fast, ability to supply product on time, and A/S ability. Moreover, superior marketing technology refers to the ability to modify design according to the market demand, ability to change production volume fast, ability to carry on effective advertising and promotional activities, ability to reach out to broad sales and distribution channels, ability to control sales and distribution network, ability to use innovative marketing techniques, and ability to forecast market growth and change in demand. Lastly, superior differentiation refers to the ability to develop new products, ability to supply highly functional and high quality products, ability to provide diverse set of product lines, and ability to differentiate brand. The results of the research prove that the integrated supply chain play core strategic role in linking these types of firms' company-wide competencies into effective firm performance. In other words, they emphasize that it is possible to step closer to the achievement of firm performance by linking with integrated supply chain instead of merely emphasizing firms' marketing capability. Accordingly, firms need to strive to cultivate the ability needed to develop effective and appropriate marketing capability and

the use of marketing because their marketing capability tends to prolong the firms' growth and survival in the market. Therefore, researches are needed to identify which are the marketing capabilities that are needed by the domestic apparel firms, which are the abilities needed to leverage these marketing capabilities, and what is the role of the integrated supply chain to optimize capability.

## 2. Firm Performance

Most of SCM studies hold the same view in that the level of SCM has a positive influence on performance outcomes. Armistead and Mapes(1993) indicate that level of management along the supply chain improves quality and operating performance through a field study of 38 firms' managers in U.K. Narasimhan and Jayaram(1998) propose that SCM impacts customer responsiveness and manufacturing performance via the key linkage between sourcing and degree of manufacturing goal achievement through empirical validation of key causal linkages in supply chain. Johnson(1999) shows, through a survey of industrial equipment distributors, that strategic SCM results in enhanced economic reward for the firm. Carter and Narasimhan(1996) suggest that efficient SCM and purchasing practices may also have a significant effect on firm performance. Their study showed that sales, market share, and market position are influenced by not only advertising, level of competition, product pricing and positioning, and degree of innovation in product lines, but also purchasing factors, thus emphasizing purchasing strategic impact on firm. Lambert et al.(1999) defines SCM activity as all of logistics activities needed for satisfying customer demand. Meanwhile, McGinnis and Kohn(1993) emphasize that SCM activity is the attribute that a firm itself has. This means that the characteristics and utilization focus of SCM activity can be different depending on whether the purpose is to fulfill various customer demands or to improve the efficiency of a firm itself. When considering that the fulfillment of customer demands and the improvement of efficiency within a firm are also the fundamental benefits of SCM, the above arguments

stimulate the curiosity on the causal relationship between the utilization characteristics of SCM activity and firm performance.

Marketing capabilities are the attributes of a company that attract customers; they are potential point of differentiation between company and its competitors. They are not directly controllable by management but are outcomes of critical management decision. LaLonde and Masters(1994) define a set of marketing capabilities that describes a firm’s capability to satisfy customers including price offered, product quality, product line breadth, order fill rate, order cycle time, order and shipment information, and frequency of delivery. A company’s underlying cost structure must be low enough to offer a price that is comparable to the competition, or the products offered must be higher in value than the competition so a premium price can be commanded. Product quality and product line variety must meet or exceed customer expectations. The company should have high order fill rate, short order cycle times, accurate order and shipping information, and frequent deliveries. These marketing capabilities should enable firms to achieve high customer satisfaction and further market performance.

### III. Methods and Procedures

#### 1. Research Purpose

The paper examined three issues in SCM for apparel firm. The first purpose of this study is to investigate the levels SCM activities, marketing capabilities,

and firm performances of apparel manufacturers. The second purpose is to examine effects of SCM activity levels for firm performance improvement. And also, to investigate effects of marketing capability levels for firm performance improvement (Fig. 1).

#### 2. Data Collection and Sample Profile

This study surveyed Korean apparel manufacturing brands that distribute products nationwide. The data was collected through questionnaires sent to brand managers or executives in 450 large/middle manufacturing corporations among Korea’s listed and registered corporations based on Korea fashion brand annual, Korea fashion association, and Korean apparel industry association. The respondents were supply chain managers, in case where separate orga-

Table 1. The sample profile of fashion firms in Korea

	Profiles	Frequency	%
Number of employees (persons)	Under 99	32	33.7
	100~199	18	18.9
	200~499	21	22.1
	500~999	18	18.9
	1000 over	6	6.3
Sales volume (mil. \$)	Below 19,999	28	29.5
	20,000~39,999	35	36.8
	40,000~79,999	17	17.9
	80,000 over	11	11.6
	Non response	4	4.2

Note. n=95

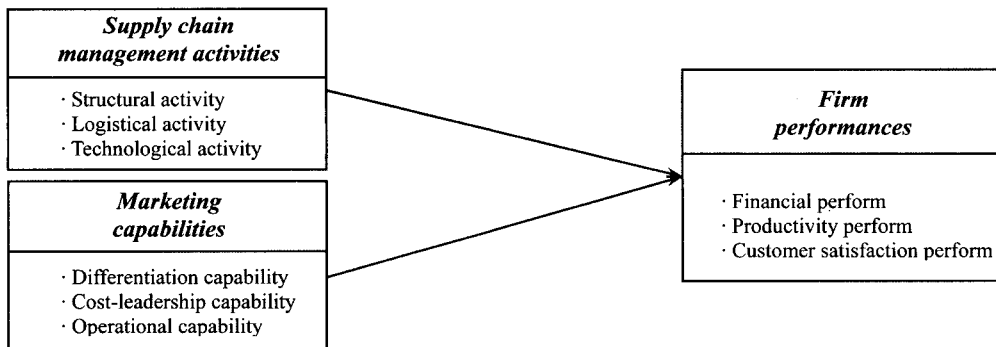


Fig. 1. A proposed model of this study.

nizational entity for SCM did not exist, response was requested from top-level executive of sale, production, or planning department who was responsible for supply chain police and corporate strategies of the form.

The data collection has been carried out from November 10 until December 11, 2006. A total of 98 completed responses were returned, the analyses were based on sample of 95 managers or executives. <Table 1> shows the characteristics of the firms where the surveyed work for. The are as follows; 33.7% of the firms operate with less than 100 local employees, taking up the majority of the firms, followed by the firms with 200 to 500 employees (22.1%), firms with 100 to 200 and 500 to 1000 employees(18.9% for each), and firms with at least 1000 employees(6.3%), in the order listed. In the case of the employees who are working overseas, 27.4% and 23.2% of the firms had at least or less than 50 employees working overseas, respectively. Moreover, 49.5% of the firms had local employees alone. To examine the profile features of subjects of investigation, in sales volume, under \$20 million was 28 firms(29.5%), \$20 million through \$40 million was 35 firms(36.8%), \$40 million through \$80 million was 17 firms(17.9%). In number of employees on respondents, the number of those under 100 employees were 32 firms(33.7%), that those under 100~200 employees were 18 firms(18.9%), that of those under 200~500 employees were 21 firms (22.1%), that of those under 500~1000 employees were 18 firms(18.9%).

<Table 2> shows the results of the production method chosen by the firms. Most of the firms tend to supply design and raw materials needed for pro-

duction to their subcontractors, and they in turn focus merely on production(28.0%), while there are some (25.9%) that supply design, and select parts of the raw material supplier and quality level, while subcontractor produce and supply according to the selected standards(25.9%). Moreover, C.M.T(method whereby design and raw materials are supplied, yet subsidiary materials such as buttons, pieces of clothes for holes, are purchased directly by subcontractor to produce and supply: 17.6%), promotion (method whereby brand plan or product concept alone are supplied, and subcontractor purchases raw and subsidiary materials in line with design and plan, and takes care of production and supply: 17.6%), and self-production(10.9%) followed in this order.

### 3. Instrument and Data Analysis

The questionnaire consisted of the questions about SCM activity levels, marketing capability levels, and firm performance levels. The responses were scaled using a 6 point. Six-point scale is used to reduce the respondents' tendency to choose interim answers.

Before mailing, the survey instrument was pre-tested by previous studies(e.g., Carter and Narasimhan, 1996; Lambert et al., 1999; Lee and Kincade, 2003; Tyndall et al., 1999) and focus group interviews to ensure content validity. Some questions were re-worded to improve validity and reliability. The questions item about the SCM activity were derived from prior studies(e.g., Kim, 2000; Kim, 2003; Kwak et al., 2002; Lee and Kincade, 2003). The level of emphasis on each of 12 twelve variables was measured by a subjective rating relative to major industry competitors on a six-point scale. This study organized 20 variables for the measurement of marketing capability based on the research of Bowersox and Daugherty(1995), Kwen(2002), Kim(2004), Moore and Fairhurst(2003). The level of emphasis on each of 20 variables was measured by a subjective rating relative to major industry competitors on a six-scale-point scale. And the firm performance items were adapted from previous literatures(e.g., Carter and Narasimhan, 1996; Johnson, 1999; Lambert et al., 1999). All performance described <Table 5> were measured

**Table 2. Production method currently in use**

Type of Production Method	Frequency	%
Self-production	26	10.9
Production for a fee	67	28.0
C.M.T	42	17.6
Promotion	42	17.6
Purchase of finished product	62	25.9

Note. Multiple response: n=239

by a subjective rating relative to their major industry competitors on a six-point scale.

The existing researches regarding the interaction of SCM activity and marketing capability were recognizing for the interrelationship of two variables. But against the direct relation between two variables, the actual proof research was not become accomplished. Also because of the purpose of this research is to examine effects of SCM activity and marketing capability for performance improvement, there were not a necessity for the discussion and the set about the relationship or an interrelationship of two variables and it excepted from the analysis. SPSS PC+ for Windows was used to analyze the data. Factor analysis was conducted for the questions about SCM activities, marketing capabilities, and firm performances as validity test. Cronbach's alpha was calculated for reliability coefficient then internal consistency was investigated for Reliability of questions about SCM activities, marketing capabilities, and firm performances.

## IV. Results and Discussion

### 1. Factor Analysis

Factor analysis after Varimax rotation of factors

with reliability test results by Cronbach's alpha were implemented to extract factors from the measures associated with SCM activity, marketing capability, and firm performance. From the result of factor analysis for finding out suitability of the SCM activities of apparel firms were same as <Table 3>. SCM activity was classified into three elements; structural, logistical, technological activity. The total explained variable was 69.40%, and a reliable coefficient calculated to find out the internal consistency of each dimension was .75 through .90, showing the internal consistency between paragraphs was relatively high.

To explain in detail, Element 1 was called as 'Structural activity' element. The structural activities are about the level of training for SCM through top-level executives, the level of managing of supply chain members, the level of investment for SCM through top-level executives, and the level of measuring of partner's results. Element 2 is a questioning item on the level of logistics infrastructure, the level of logistical standardization, the level of integration of logistics activity, and the level of logistics through information network, and was called as 'Logistical activity' element. Element 3 was called as 'Technological activity' element. The technological activities are about the level of Electronic Data Interchange,

Table 3. Supply chain management activity items and result of factor analyses

Factor title & Items	Item loading
<b>1. Structural factor</b>	
- The level of training for supply chain management through top-level executives	.834
- The level of managing of supply chain members	.755
- The level of investment for supply chain management through top-level executives	.736
- The level of measuring of partner's results	.692
<b>Eigenvalues=3.079 Cumulative %=25.662 Alpha score=.812</b>	
<b>2. Logistical factor</b>	
- The level of logistics infrastructure	.879
- The level of logistical standardization	.871
- The level of integration of logistics activity	.832
- The level of logistics through information network	.611
<b>Eigenvalues=3.008 Cumulative %=50.727 Alpha score=.904</b>	
<b>3. Technological factor</b>	
- The level of Electronic Data Interchange (EDI)	.850
- The level of information sharing through POS system	.734
- The level of computerization for ordering process	.605
- The level of Effective response system(QR, JIT)	.545
<b>Eigenvalues=2.241 Cumulative %=69.400 Alpha score=.751</b>	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

the level of information sharing through POS system, the level of computerization for ordering process, and the level of Effective response system(QR, JIT).

From the result of factor analysis for finding out suitability of the marketing capabilities of apparel firms were same as <Table 4>. Marketing capability was classified into three elements; differentiation cost-leadership, and operational capability. The total explained variable was 73.68%, and a reliable coefficient calculated to find out the internal consistency of each dimension was .91 through .94, showing the internal consistency between paragraphs was relatively high. To explain in detail, Element 1 was called as ‘Differentiation capability’ element. The differentiation capabilities are about the capability to develop new product, the capability to supply high-quality service, the capability to develop distinctive brand, the capability to supply high-quality product, the capability to offer differentiation of design, the

capability to advertise and promote the product, and the capability to utilize innovative production technique. Element 2 is a questioning item on the capability to compete on price, on-time delivery capability, the capability to deliver products quickly, volume flexibility capability, the capability to reduce production cost, quality control capability in production activity, and the capability to procure raw-material consistently, and was called as ‘Cost-leadership capability’ element. Element 3 was called as ‘Operational capability’ element. The operational capabilities are about the capability to control sales/distribution network, the capability to distribute the product broadly, the capability to deal with various partner, customization capability, the capability to offer consistent quality product, and the capability to forecast market trend or demand.

As a result of factor analysis for finding out suitability of the firm performance of apparel firms were

**Table 4. Marketing capability items and result of factor analyses**

<b>Factor title &amp; Items</b>	<b>Item loading</b>
<b>1. Differentiation capability</b>	
- The capability to develop new product	.824
- The capability to supply high-quality service	.811
- The capability to develop distinctive brand	.800
- The capability to supply high-quality product	.788
- The capability to offer differentiation of design	.784
- The capability to advertise and promote the product	.657
- The capability to utilize innovative production technique	.626
<b>Eigenvalues=5.972 Cumulative %=49.861 Alpha score=.941</b>	
<b>2. Cost-leadership capability</b>	
- The capability to compete on price	.865
- On-time delivery capability	.743
- The capability to deliver products quickly	.692
- Volume flexibility capability	.610
- The capability to reduce production cost	.575
- Quality control capability in production activity	.557
- The capability to procure raw-material consistently	.502
<b>Eigenvalues=4.666 Cumulative %=53.191 Alpha score=.922</b>	
<b>3. Operational capability</b>	
- The capability to control sales/distribution network	.859
- The capability to distribute the product broadly	.767
- The capability to deal with various partner	.627
- Customization capability	.627
- The capability to offer consistent quality product	.567
- The capability to forecast market trend or demand	.494
<b>Eigenvalues=4.098 Cumulative %=73.682 Alpha score=.913</b>	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.



Table 5. Firm performance items and result of factor analyses

Factor title & Items	Item loading
<b>1. Financial perform</b>	
- Return on assets	.818
- Sales growth	.798
- Market share growth	.746
- Return on investment	.738
- Net profit	.700
- Financial liquidity	.686
<b>Eigenvalues=4.432 Cumulative %=27.697 Alpha score=.948</b>	
<b>2. Productivity perform</b>	
- The improvement of flexibility for partner	.820
- The reduction of production lead-time for partner	.796
- The reduction of production/distribution step	.728
- The reduction of delivery lead-time for partner	.694
- The accuracy of delivery for partner	.629
<b>Eigenvalues=4.210 Cumulative %=54.012 Alpha score=.916</b>	
<b>3. Consumer satisfaction perform</b>	
- The reduction degree of product return ratio	.808
- The reduction of response time in processing requests for product returns or after-service	.770
- The speed of order handling	.686
- The reduction of response time in processing requests for product design changes	.648
- The accuracy of order processing for customers	.594
<b>Eigenvalues=3.658 Cumulative %=76.877 Alpha score=.883</b>	

Extraction Method: Principal Component Analysis. Rotation Method: Varimax with Kaiser Normalization.

same as <Table 5>. Marketing capability was classified into three elements; financial, productivity, and consumer satisfaction performance. The total explained variable was 76.87%, and a reliable coefficient calculated to find out the internal consistency of each dimension was .88 through .94, showing the internal consistency between paragraphs was relatively high. To explain in detail, Element 1 was called as 'Financial performance' element. The financial performances are about the return on assets, sales growth, market share growth, return on investment, net profit, and financial liquidity. Element 2 is a questioning item on the improvement of flexibility for partner, the reduction of production lead-time for partner, the reduction of production/distribution step, the reduction of delivery lead-time for partner, and the accuracy of delivery for partner, and was called as 'Productivity performance' element. And Element 3 was called as 'Consumer satisfaction performance' element. The consumer satisfaction performances are about the reduction degree of product return ratio, the reduction of response time in processing requests for

product returns or after-service, the speed of order handling, the reduction of response time in processing requests for product design changes, and the accuracy of order processing for customers.

## 2. Effects of supply Chain Management Activity for Performance Improvement

In order to investigate the effect of SCM activity and marketing capability concern on firm performance of apparel firms, regression analysis was conducted. In this analysis, firm performance was a dependent variable and SCM activity and marketing capability were used as independent variables. Based on the results, SCM activity and marketing capability were significant variables in explaining firm performance. In order to investigate the effect of factors of SCM activity on factors of firm performance of apparel firms, multiple regression analysis was conducted. In this analysis, firm performance was a dependent variable and SCM activity was used as independent variables.

**Table 6. Effect of supply chain management activity concern on firm performance**

Firm performance	Supply chain management activity	$\beta$	$F$	$R^2$
Financial perform	Structural activity	.193	23.869***	.433
	Logistical activity	.073		
	Technological activity	.528***		
Productivity perform	Structural activity	.405***	34.269***	.526
	Logistical activity	-.042		
	Technological activity	.477***		
Consumer satisfaction perform	Structural activity	.309***	65.056***	.681
	Logistical activity	-.005		
	Technological activity	.637***		

\*\*\* $p < .001$ 

Based on the results of <Table 6>, structural, logistical, and technological activity factors of SCM activity appeared to have statistically significant explanatory power ( $R^2=.433$ ) in explaining financial perform factor of firm performance ( $F=23.86$ ,  $p<.001$ ). In detail, technological activity factor of SCM activity ( $\beta=.528$ ,  $p<.001$ ) was significant variable in explaining financial perform. Through of this result, it was found that the improvement of technological activities such as EDI, information sharing through POS system, computerization for ordering process, and effective response system affected acquirement of financial perform; return on assets, sales growth, market share growth, return on investment, net profit, and financial liquidity. This result is similar to prior studies (e.g. Kim, 2003; Park & Lee, 2004).

The next thing, structural, logistical, and technological activity factors of SCM activity appeared to have statistically significant explanatory power ( $R^2=.526$ ) in explaining productivity perform factor of firm performance ( $F=34.26$ ,  $p<.001$ ). In detail, structural activity factor ( $\beta=.405$ ,  $p<.001$ ) and technological activity factor ( $\beta=.477$ ,  $p<.001$ ) of SCM activity were significant variable in explaining productivity perform. Also, structural, logistical, and technological activity factors of SCM activity appeared to have statistically significant explanatory power ( $R^2=.681$ ) in explaining consumer satisfaction perform factor of firm performance ( $F=65.05$ ,  $p<.001$ ). In detail, structural activity factor ( $\beta=.309$ ,  $p<.001$ ) and technological activity factor ( $\beta=.637$ ,  $p<.001$ ) of SCM activity was significant variable in explaining consumer satisfaction perform.

Through of this result, it was found that the improvement of structural activity such as training for SCM through top-level executives, managing of supply chain members, investment for SCM through top-level executives, and measuring of partner's results and the improvement of technological activities such as EDI, information sharing through POS system, computerization for ordering process, and effective response system affected acquirement of productivity perform (flexibility for partner, the reduction of production lead-time for partner, the reduction of production/distribution step, and the reduction of delivery lead-time for partner etc.) and consumer satisfaction perform (the reduction degree of product return ratio, the reduction of response time in processing requests for product returns or after-service, the speed of order handling, and the reduction of response time in processing requests for product design changes etc.). This is alike prior studies (Kwak et al., 2002; Lee, 2001) which show improvement of structural and technological activity takes productivity and consumer satisfaction perform. Above all the results, it was found that the improvement of technological activities affected acquirement of financial performs, productivity performs, and customer satisfaction performs. Structural activities affected the factor of productivity performs.

### 3. Effects of Marketing Capability for Performance Improvement

In order to investigate the effect of factors of marketing capability concern on factors of firm perfor-

**Table 7. Effect of marketing capability on firm performance**

Firm performance	Marketing capability	$\beta$	$F$	$R^2$
Financial perform	Differentiation capability	.474**	28.634***	.479
	Cost-leadership capability	-.133		
	Operational capability	.394**		
Productivity perform	Differentiation capability	.051	38.346***	.555
	Cost-leadership capability	.501**		
	Operational capability	.239		
Consumer satisfaction perform	Differentiation capability	.473**	48.130***	.611
	Cost-leadership capability	.164		
	Operational capability	.208		

\*\* $p < .01$ , \*\*\* $p < .001$

mance of apparel firms, multiple regression analysis was conducted. In this analysis, firm performance was a dependent variable and marketing capability; differentiation, cost-leadership, and operational capability was used as independent variables. Based on the results of <Table 7>, differentiation, cost-leadership, and operational capability factors of marketing capability appeared to have statistically significant explanatory power ( $R^2 = .479$ ) in explaining financial perform factor of firm performance ( $F = 28.63$ ,  $p < .001$ ).

In detail, differentiation capability ( $\beta = .474$ ,  $p < .01$ ) and operational capability ( $\beta = .394$ ,  $p < .01$ ) factor of marketing capability was significant variable in explaining financial perform. Through of this result, it was found that the improvement of differentiation capability such as the capability to develop new product, to supply high-quality service, to develop distinctive brand, to supply high-quality product, to offer differentiation of design, to advertise and promote the product, and to utilize innovative production technique affected acquirement of financial perform; return on assets, sales growth, market share growth, return on investment, net profit, and financial liquidity. And the improvement of operational capability such as the capability to control sales/distribution network, to distribute the product broadly, to deal with various partner, customization capability, to offer consistent quality product, and forecast market trend or demand affected acquirement of financial perform. This result is similar to prior study (Moore & Fairhurst, 2003).

The next thing, differentiation, cost-leadership, and operational capability factors of marketing capability

appeared to have statistically significant explanatory power ( $R^2 = .555$ ) in explaining productivity perform factor of firm performance ( $F = 38.34$ ,  $p < .001$ ). In detail, cost-leadership capability factor ( $\beta = .531$ ,  $p < .01$ ) of marketing capability was significant variable in explaining productivity perform. Through of this result, it was found that the improvement of cost-leadership capability such as the capability to compete on price, on-time delivery capability, to deliver products quickly, volume flexibility capability, to reduce production cost, quality control capability in production activity, and the capability to procure raw-material consistently affected acquirement of productivity perform. Lastly, differentiation, cost-leadership, and operational capability factors of marketing capability appeared to have statistically significant explanatory power ( $R^2 = .611$ ) in explaining consumer satisfaction perform factor of firm performance ( $F = 48.13$ ,  $p < .001$ ). In detail, differentiation capability factor ( $\beta = .473$ ,  $p < .001$ ) of marketing capability was significant variable in explaining consumer satisfaction perform. So the improvement of differentiation capability such as the capability to develop new product, to supply high-quality service, to develop distinctive brand, to supply high-quality product, to offer differentiation of design, to advertise and promote the product affected acquirement of consumer satisfaction perform. This is alike prior studies (Kwen, 2002) which show improvement of firm's differentiation capability takes consumer satisfaction perform. Above all the results, it was found that the improvement of differentiation capability affected acquirement of financial performs, and customer satisfaction

performs. Cost-leadership capability affected the factor of productivity performs, and operational capability affected acquirement of financial performs.

## V. Conclusions

This study sought to determine the level of SCM for apparel firm. According to the results, SCM activity was classified into three dimensions: structural, logistical, and technological. Marketing capability was classified into three dimensions: differentiation, cost-leadership, and operational. Three dimension of firm performance were identified such as, financial, productivity, and customer satisfaction. As a results of investigate the effect of SCM activity and marketing capability concern on performance of apparel firms, SCM activity and marketing capability were significant variables in explaining performance. In detail, technological activity factor such as EDI, information sharing through POS, computerization for ordering process, and effective response system of SCM activity was significant variable in explaining financial performs. And structural activity factor such as training for SCM through top-level executives, managing of supply chain members, investment for SCM through top-level executives, and measuring of partner's results, and technological activity factor was significant variable in explaining productivity perform and consumer satisfaction perform. The next things, differentiation capability such as the capability to develop new product, to supply high-quality service, to develop distinctive brand, to supply high-quality product, and to utilize innovative production technique and operational capability factor such as the capability to control sales/distribution network, to deal with various partner, customization capability, and forecast market trend or demand was significant variable in explaining financial perform. The cost-leadership capability factor such as the capability to compete on price, on-time delivery capability, to deliver products quickly, to reduce production cost, and the capability to procure raw-material consistently of marketing capability was significant variable in explaining productivity perform. And differentiation capability factor of marketing capability

was significant variable in explaining consumer satisfaction perform. The findings of this study would be helpful for apparel manufacturer to design effective strategic framework of SCM with their partners, and to establish practical guidance and enhance more crucial SCM activities and marketing capabilities within a firm.

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## 요 약

본 연구는 의류기업의 공급사슬 기반활동과 마케팅 역량, 업무성과의 구성차원을 파악하고, 업무성과 향상을 위한 공급사슬 기반활동과 마케팅 역량의 효율적인 활용방안을 모색해 보았다. 공급사슬구조의 중간단계에 위치하고 있어 전체 산업의 전후방에 미치는 효과가 크고, 모든 가치활동을 수행할 능력을 가진 대규모 의류유통기업을 대상으로, 한국패션브랜드연감, 한국의류산업협회 등에 등록된 회원사 리스트를 바탕으로 단순무작위 표집하였다. 설문지 조사방법을 통해 총 95부를 자료분석에 이용하였고, 공급사슬 기반활동, 마케팅 역량, 업무성과 수준을 6점 척도로 측정하였다. 변수의 차원 분류 및 타당도, 신뢰도를 파악하기 위해 요인분석과 신뢰도분석을 실시하였고 공급사슬 기반활동, 마케팅 역량이 업무성과에 미치는 영향을 알아보기 위해 다중회귀분석을 실시하였다. 공급사슬 기반활동은 구조적, 물류적, 기술적 요인으로 분류되었고, 마케팅 역량은 차별화, 비용우위, 경영우위 요인으로 분류되었고, 업무성과는 재무시장, 생산, 고객만족으로 분류되었다. 공급사슬 기반활동이 업무성과에 미치는 영향은 기술적 활동강화를 통해 재무시장, 생산, 고객만족성과를 얻을 수 있었고, 구조적 활동강화를 통해서 생산성과를 극대화 할 수 있었다. 마케팅 역량이 업무성과에 미치는 영향은 차별화 역량강화를 통해 재무시장과 고객만족성과를 얻을 수 있었고, 비용우위 역량은 생산성과에, 경영우위 역량은 재무시장성과에 영향을 미치는 것으로 나타났다.