

The Performance of Supply Chain Management in Textile Fashion Business⁺

Shin, Sang-Moo

Associate Professor, Dept. of Textile Engineering, Soongsil University

Abstract

The purpose of this study was to investigate SCM performance of textile fashion business in a competitive market environment. For the methodology of this study, the questionnaire was developed based upon the literature. 230 questionnaires were distributed to the experts who operate SCM in textile fashion firms. The returned usable 149 were analyzed by SPSS10.0 with multiple regression analysis and Cronbach's Alpha for internal consistency and reliability.

The results of this study were as follows:

The SCM performance of the textile fashion firms was affected by information system, business environment, and partnership in a descending order. Analyzing on the business environment, CEOs' concern about incorporating SCM and the degree of assistance from government and textile fashion federation impacted the performance of SCM in a descending order. For information system, standardized computerization, information sharing, and computerization with infrastructure on intra/inter business impacted the SCM performance of the firms in a descending order. For partnership, strategic alliance, openness about corporate culture, and credibility of partnership impacted the SCM performance of the firms in a descending order.

Key Words : Supply Chain Management, performance, textile fashion business

1. Introduction

It's fast, it's fashionable. Nowadays, textile fashion business has been faced new era "fast-fashion" in the global market. No wonder fast-fashion companies such as H&M, Zara, Spain's Mango, and Britain's Top Shop, are among

the brightest in Europe's retail market. A Bain & Co. study found that fast-fashion outlets in Spain and Britain posted average double-digit sales growth, compared with 4% growth in overall retail sales in those countries(Business Week, 2006)¹⁾.

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Zara's fast pace means that some popular items appear and disappear within a week, creating an image of scarcity that many shoppers find irresistible. The fast-fashion approach also helps Zara reduce its exposure to fashion faux pas. The company produces batches of clothing in such small quantities that even if it brings out a design that no one will buy, it can cut its losses quickly and move on to another trend. But many textile fashion businesses runs the risk of stock-outs, lost sales, and endangered relationships with the chains if a manufacturer decides to go lean on inventories(Abernathy, Dunlop, Hammond, & Weil, 2000)²⁾.

Also, retail innovation has been spread rapidly all over the world. E-tailer (Electronic + Retailer) has been emerged in Internet cyber market. E-business has been growing rapidly and has provoked mass customization.

Textile fashion companies under this uncertain and innovative environment such as fast fashion and e-business are experiencing many managerial problems in production planning, forecasting, inventory management, production system, and timely distribution (Fisher, Hammond, Obermeyer, & Raman, 1994)³⁾.

Brewer and Speh (2000)⁴⁾ cited Supply Chain Management (SCM) as one of the most important management practice for determining worldly class performance collaborating fast-fashion due to improve the interrelation among different stages of industries such as fiber, textile, apparel manufacturing, and retail.

So, SCM which is reflected in the strategy of quick response in the apparel industry can boost the textile fashion business from a labor-intense and petty to information and technology-intense business suitable for innovative fast-fashion market environment.

Previous researches have been focused on efficiency of SCM (Ku, 2000; Kim, 2000; Yoon, 2001)⁵⁾⁶⁾⁷⁾, and system development for implementing SCM (Kim & Park, 2000)⁸⁾, and SCM factors (Kim, 2000; Lee, 2000)⁶⁾⁹⁾. Very little verifying research has been done SCM performance of textile fashion business. Therefore, the purpose of this study was to investigate SCM performance of textile fashion firms in a competitive market.

II. Review of Literature

Christopher (1994)¹⁰⁾ indicated a supply chain encompasses all the activities associated with goods from raw materials stage through to the end-user. It includes a variety of firms, ranging from fiber, textile, and apparel to retail. A supply chain can be defined as a network of procurement, manufacturing and distribution activities with related products (Swaminathan, 1998)¹¹⁾. According to Bowersox (1997)¹²⁾ and Metz (1997)¹³⁾, Supply Chain Management (SCM) is a collaborative-based strategy to link cross-enterprise business operations to manage relationships, information, and material flow across organizational borders to cut costs and enhance flow. The Global Supply Chain Forum (1998)¹⁴⁾ represented that SCM is predicted on partnership and cooperation and is the integration of business processes from end user through original suppliers. Thus, SCM provided products, services, and information that add value for customers is seen as a key to delivering higher customer satisfaction with reduced lead times and costs (Bhattacharya et al., 1996)¹⁵⁾.

Anderson & Favre (1997)¹⁶⁾ indicated SCM factors were information system, strategic alliance

with suppliers, and flexibility of supply chain. Scharlacken (1998)¹⁷⁾ and Metz(1997)¹⁸⁾ insisted credibility among members and information system for successful SCM operation. According to Derocher & Kilpatrick (2000)¹⁹⁾, information system, alliance, and integrated management among industries were important for delivering SCM. Also, CEO's concern and progressive support for SCM operation were significant business environmental factors and partnership with credibility was critical for SCM (Ellrem, 1995)²⁰⁾.

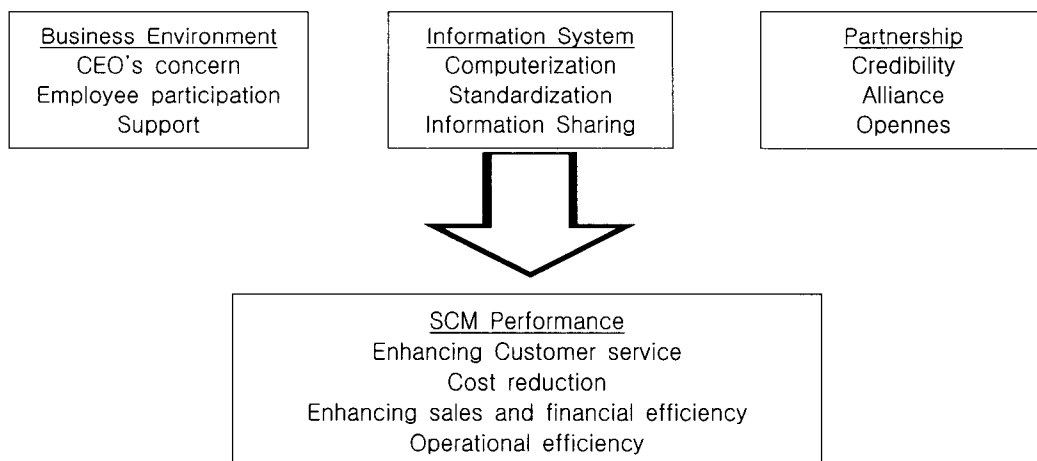
Based upon studies of Fine (1999)²¹⁾, CLM (Council of Logistics Management, 1998)²²⁾, Brewer and Speh (2000)⁴⁾, and Gill & Abend (1997)²³⁾, achieving real potential of SCM requires integration not only among departments within the organization but also with external partners for performing cost reduction, reduced lead-time, reduced inventory, increasing sales volume, effective operational management, and better customer services through whole supply chain increasing effective productivity.

1. Research development

Through the literature review (Derocher & Kilpatrick, 2000; Ellrem, 1995; Walker, 1995; Lee, 2000; Park, 2000)¹⁹⁾²⁰⁾²⁴⁾⁶⁾²⁵⁾, three SCM factors such as information system (standardization of computerized intra/inter business, information sharing with intra/inter business, computerization of infrastructure on intra/inter business), business environment (CEOs'concern about incorporating SCM, degree of assistance from government and textile fashion federation, individual employee participation), and partnership (alliance, openness of corporate culture and information sharing with intra/inter business, credibility of partners) were identified and measured by 7 point Likert type scale (7: very much do so, 1: very much not do so).

Based upon previous review of literature, enhancing customer services, cost reduction, improving operational management, and increasing sales & profits were measured by 7 point Likert type scale (7: very much do so, 1: very much not do so) for SCM performances of the textile fashion firms.

III. Methodology



<Fig 1> Research model

2. Research model

According to research model (Fig. 1), SCM performance as dependent variables (Table I) were customer service, cost reduction, operational efficiency, and sales & financial efficiency. SCM factors as independent variables (Table II) were business environment, information system, and partnership.

For the methodology of this study, the questionnaire was developed based upon the literature review (Derocher & Kilpatrick, 2000; Lee, 2000; Park, 2000)⁽⁹⁾⁽⁶⁾⁽²⁵⁾. 230 questionnaires were distributed to the experts who operate SCM in textile fashion firms. The returned usable 149 were analyzed by SPSS10.0 with multiple regression analysis and Cronbach's Alpha for internal consistency and reliability.

<Table I> SCM performance variables

Variable	Factor	Variable	Factor
Customer service	<ul style="list-style-type: none"> - Delivery time - Out of stock - Order fulfillment - Lead time - Back order - Order change - Customer claim 	Operational efficiency	<ul style="list-style-type: none"> - Inventory reduction - Turn over - Facilities - Logistics network - Product development - Flexible supply chain
Cost reduction	<ul style="list-style-type: none"> - Inventory cost - Transportation cost - Production cost - Procurement cost - Planning and management cost 	Sales & financial efficiency	<ul style="list-style-type: none"> - Market share - Cash flow - Return on capital

<Table II> SCM factors

Business environment	Employee Participation	Employee participation on SCM, perception and training on new methods
	CEO's concern	CEO's support & participation
	Support	Support from government & textile fashion federation
Information system	Computerization	Inter & intra business infrastructure and computerization
	Standardization	Standard-based computerization of inter & intra business processes
	Information sharing	Information sharing on inter & intra businesses for productivity gains
Partnership	Credibility	Credibility between businesses in supply chain
	Alliance	Level and sustainability of strategic alliances between businesses
	Openness	Openness in corporate culture and information flow among businesses

<Table III> Cronbach's Alpha for internal consistency and reliability

Dependent variable		Variables	Cronbach's α
		Performance	.9613
Independent variable	H1	Business environment	.9244
		Information system	.7817
		Partnership	.8767
	H2	CEO's concern	.9492
		Employee participation	.9122
		Support from government & textile fashion federation	.7946
	H3	Computerization	.9277
		Standardization	.8650
		Information sharing	.8671
	H4	Credibility	.8559
		Alliance	.7857
		Openness of corporate culture & information	.7902

<Table IV> Demographic Information

		Frequency	%
Sex	Male	101	67.8
	Female	48	32.2
	Total	149	100
Age	20-29	90	60.4
	30-39	35	23.5
	40-49	21	14.1
	Above 50	3	2.0
	Total	149	100
Education	High School	2	1.3
	College (2yr)	19	12.8
	University	128	85.9
	Total	149	100
Major	Business	33	22.1
	Liberal arts and Human	21	14.1
	Clothing and Textiles	50	33.7
	Textile Engineering	19	12.6
	Other Engineering	12	8.1
	Others	13	8.7
	Missing	1	0.7
Total	149	100	
Types	Fiber	14	9.4
	Textiles	10	6.7
	Dying and Finishing	15	10.1
	Apparel Manufacture	20	13.4
	Apparel Retailing	36	24.2
	Apparel Manufacture and Retailing	54	36.2
	Total	149	100

<Table IV> continue

		Frequency	%
Sales volume	Less than 50 M Won	12	8.1
	50 M – 200 M	25	16.8
	200 M –400 M	64	43.0
	400 M –600 M	17	11.4
	600 M –800 M	16	10.7
	800 M –1,000 M	10	6.7
	More Than 1,000 M	5	3.4
	Total	149	100

IV. Results and Discussion

The results of this study were as follows:

H1: Business environment, information system, and partnership affect the SCM performance of the textile fashion firm.

<Table V> Analysis on SCM Performance

$Y_1 = 0.194X_1 + 0.351X_2 + 0.174X_3 + 1.68$ $Y_1 = \text{Performance}, X_1 = \text{Business environment},$ $X_2 = \text{Information system}, X_3 = \text{Partnership}$ ($p < 0.05$)						
	B	Std Error	Standardized Coefficient β	t-value	p-value	
Business environment	0.194	0.178	0.324	3.422	.024	accepted
Information system	0.351	0.104	0.425	5.682	.002	accepted
Partnership	0.174	0.277	0.301	2.751	.010	accepted

$R^2 = 0.384$ F-value : 16.889 Sig. : 0.001

<Table VI> Analysis on Business Environment

$Y_1 = 0.240X_1 + 0.067X_2 + 0.150X_3 + 2.77$ $Y_1 = \text{Performance}, X_1 = \text{CEO's concern},$ $X_2 = \text{Employee participation}, X_3 = \text{Support}$ ($p < 0.05$)						
	B	Std Error	Standardized Coefficient β	t-value	p-value	
CEO's concern	0.240	.060	.405	3.969	.000	accepted
Employee participation	0.067	.071	.097	0.934	.352	rejected
Support	0.150	.071	.156	2.104	.037	accepted

$R^2 = 0.301$ F-value : 20.858 Sig. : .000

The performance of the textile fashion firms that adopted SCM was affected by information system, business environment, and partnership in a descending order.

H2: Among business environment, CEO's concern about incorporating SCM, the degree of assistance from government & textile fashion federation, and individual participation of organization affect the SCM performance of textile fashion firms.

Among business environment, CEOs' concern about incorporating SCM and the degree of assistance from government and textile fashion federation impacted the performance of SCM in

a descending order.

H3: Among information system, standardization of computerized intra/inter business, information sharing with intra/inter business, and computerization of infrastructure on intra/inter business affect the SCM performance of textile fashion firms.

For information system, standardized computerization from intra to inter business, information sharing from intra to inter business, and computerization with infrastructure on intra/inter business impacted the SCM performance of the firms in a descending order.

<Table VII> Analysis on Information System

$Y_1 = 0.076X_1 + 0.241X_2 + 0.192X_3 + 2.28$ $Y_1 = \text{Performance}, X_1 = \text{Computerization},$ $X_2 = \text{Standardization}, X_3 = \text{Information sharing}$ <p>($p < 0.05$)</p>						
	B	Std Error	Standardized Coefficient β	t-value	p-value	
Computerization	0.076	.031	.186	2.428	.016	accepted
Standardization	0.241	.086	.263	2.803	.006	accepted
Information sharing	0.192	.065	.262	2.963	.004	accepted

$R^2 = 0.342$ F-value : 25.134 Sig. : .000

<Table VIII> Analysis on Partnership

$Y_1 = 0.171X_1 + 0.270X_2 + 0.169X_3 + 1.81$ $Y_1 = \text{Performance}, X_1 = \text{Credibility},$ $X_2 = \text{Alliance}, X_3 = \text{Openness}$ <p>($p < 0.05$)</p>						
	B	Std Error	Standardized Coefficient β	t-value	p-value	
Credibility	0.171	0.074	.173	2.310	.022	accepted
Alliance	0.270	0.084	.309	3.214	.002	accepted
Openness	0.169	0.077	.203	2.202	.029	accepted

$R^2 = 0.309$ F-value : 21.601 Sig. : 0.000

H4: Among partnership, alliance, openness of corporate culture & information sharing with intra/inter business, and credibility of partner affect the SCM performance of textile fashion firms.

For partnership, strategic alliance, openness about corporate culture on information sharing with intra/inter business, and credibility of partnership impacted the SCM performance of the firms in a descending order.

As indicated, information system is the most important factor to perform SCM system in textile fashion firms.

Therefore infrastructure for information system should be prepared in advance and we have to consider standardization of computerization from up stream to down stream. It may make textile fashion business to be information and technology oriented business. Also, it may provide open atmosphere for information sharing via intra/inter industry. Furthermore CEOs' concern and enthusiasm makes differences

V. Conclusions

The performance of the textile fashion firms that adopted SCM was affected by information system, business environment, and partnership in a descending order.

For information system, standardized computerization from intra to inter business, information sharing from intra to inter business, and computerization with infrastructure on intra/inter business impacted the SCM performance of the firms in a descending order. Among business environment, CEO's concern about incorporating SCM and the degree of assistance from government & textile fashion

federation impacted the performance of SCM in a descending order.

For partnership, strategic alliance, openness about corporate culture on information sharing with intra/inter business, and credibility of partnership impacted the SCM performance of the firms in a descending order.

Therefore information system with standardization and information sharing among the industries was the most important factor affecting the performance of SCM.

Computerization might be the prerequisite to adopting SCM incorporating firms. Also, CEOs' concern about SCM and strategic alliance among businesses were important factors impacting the SCM performance of the textile fashion firms.

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