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RETAILERS' ATTITUDE TOWARDS PHARMACEUTICAL SUPPLY CHAIN MANAGEMENT: A Study on Eskayef Bangladesh Ltd.

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Abstract: *The Supply Chain Management (SCM) of pharmaceutical products deserves high priority as it is related to the life and death of men and animals around the world. SCM includes forecasting and planning, purchasing and procurement, logistics, operations, inventory management, transportation, warehousing, distribution, customer service etc. However, it is difficult to find a standard model of SCM operating in the business community particularly in the pharmaceutical sector. This paper attempts to investigate retailers' attitude towards Pharmaceutical SCM of Eskayef Bangladesh Ltd. Descriptive Statistics and Factor Analysis method have been employed here to investigate the attitudes of the retailers of this leading pharmaceutical company in Bangladesh. The study findings confirm that 'Eskayef Bangladesh Limited' has an effective supply SCM strategy even though there is still room for improvement. 'Eskayef Bangladesh Limited' produces some of the medicines locally from an ultra modern factory plant in Tongi and distributes them through its own wholesales and other members of the pharmaceutical distribution chain to make sure accessibility of good quality and efficacious medicines at affordable prices.*

Index terms: *Pharmaceutical Supply Chain Management, Customer Relationship Management, Customer Service Management, Demand Management, Point-of-Consumption, JEL Classification: I11, L81, M31, P46*

INTRODUCTION

Supply Chain Management (SCM) is the process of planning, implementing and controlling the operations of the supply chain with the purpose to satisfy customer requirements as efficiently as possible. SCM spans all movement and storage of raw materials, work-in-process inventory and finished goods from point-of-origin (POO) to point-of-consumption (POC). SCM is a conscious and deliberate control, integration, and management of the business functions. SCM contributes and affects that supply flow through the business

for the purpose of improving performance, costs, flexibility etc, which bring the ultimate benefits of the end customers or consumers. The supply chain function includes many sub-areas such as: forecasting and planning, purchasing and procurement, logistics, operations, inventory management, transportation, warehousing, distribution, customer service etc. However, it is difficult to find a standard model of SCM operating in the business community particularly in the pharmaceutical sector.

A. Statement of Problem

Eskayef Bangladesh Ltd is one of the largest and fastest expanding pharmaceutical companies in Bangladesh. The company, headquartered in Dhaka, is also known as SK+F and is a part of the Transcom Group. Eskayef Bangladesh Ltd was born from the old facilities of SmithKline & French in Bangladesh when the company was restructured to form GlaxoSmithKline in 2000. The pharmaceutical company is engaged in the manufacturing and marketing of a wide range of therapeutic drugs, bulk pellets and animal health and nutrition products with annual sales surpassing 60 million US dollars. The company started its production of pharmaceuticals with the manufacture of generic products for the domestic market but has since moved into bulk products and the veterinary market. SK+F currently manufactures and markets 28 different animal health products in 57 different dosage forms.

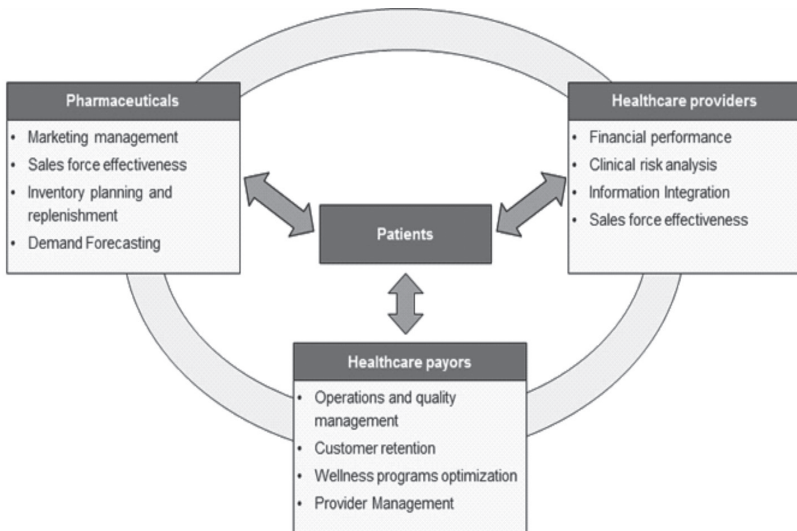


Figure 1: Basic Model of Pharmaceutical SCM

Source: www.slideshare.net/pharma-chain/ accessed on 25-12-2015.

With qualified, trained and skilled professionals on its staff and its unswerving standards of quality control, the company has distinguished itself as one of the most respected names in the pharmaceutical industry. Eskayef's manufacturing facility has transcended the frontiers after the accreditation of UK MHRA (United Kingdom Medicines and Healthcare products Regulatory Agency). The dedicated cephalosporin plant of Eskayef Bangladesh Limited is the top class state-of-the-art manufacturing facility in Bangladesh Pharmaceutical industry. Eskayef Bangladesh Ltd. has been showing a significant outcome in exporting medicines to many countries. Eskayef Bangladesh Ltd. has started supplying medicines in 16 countries like Germany, UAE, Nepal, Bhutan, Sri Lanka, Myanmar, Vietnam, Ghana, Iraq, Indonesia, Kenya, Guatemala, Belize, Yemen, Macau and Somalia. The present study is an attempt to analyze the retailers' attitude on SCM of Eskayef Bangladesh Limited.

B. Objectives of the Study

The broad objective of this study is to analyse the retailers' attitude towards the supply chain of Eskayef Bangladesh Ltd. The specific objectives are as follows:

- To assess the extent to which the supply chain function of Eskayef has been operating;
- To understand the SCM of Eskayef;
- To evaluate the supply chain sustainability.
- To identify the barriers and challenges of the supply chain of Eskayef

C. Literature Review

It has been found that literature with specific focus on this sector in Bangladesh is not sufficient. However, a brief review of literature has been carried out. As the pharmaceutical marketplace confronts daunting challenges with various stakeholders demanding the pharmaceutical products to be affordable, strategic planning would be of the essence [1], [2]. For the pharmaceutical industry, it assumes special significance as medical commodities would require to be delivered through the supply chain timely and within the reach and means of the consumers to meet their needs and satisfaction [3]. Supply chain is a set of players, processes, information, and resources which transfers raw materials, and components to finished products or services and delivers them to the customers.

A Supply Chain is that network of organizations which are involved through upstream and downstream linkages in the different processes and

activities that produce value in the form of products and services in the hands of the ultimate customer or consumer [4]. This definition highlights the key features of supply chain such as networks, linkages-upstream and downstream, processes, value and ultimate customers. SCM is defined as the network of organisations that are involved, through upstream and downstream linkages, in the different process and activities that produce value in the form of products and services delivered to the ultimate consumer [5]. SCM is the management of a network of retailers, distributors, transporters, storage facilities and suppliers that participate in the sale, delivery and production of a particular product [6], [7] has stated that pharmaceuticals, being high value goods, demand a safe process at all hubs in the chain, and security measurements must be harmonized and rigorously checked across the operating lanes with its sub-warehouses and on/off loading places. He further stated that the importance of utilizing as few on/off loading places and changes of transport mode is one of the challenges for a time effective and secure solution; this at a minimized cost level. The goals of the pharmaceutical supply chain, as indicated by [6], obviously emphasize regulatory compliance and safety of products, but also include leveraging information to be more responsive to the needs of consumers. They noted that the unique nature of the supply chain for pharmaceuticals makes managing complex information for supply chain effectiveness challenging, but clearly the rewards for doing so are significant. They also indicated that, companies that excel in supply chain operations perform better in almost every financial measure of success.

[5] observed that, the shift to a demand-driven focus has been taking place within the CP industry for years. While perhaps leading the way is n implementing demand-driven processes, the CP industry is not alone in this interest or intent. They noted that leading pharmaceutical manufacturers also recognize the value of adopting demand-driven supply chain practices and are benchmarking their organizations against CP manufacturers, and finding that their industry is generally behind the pace. They also indicated that the pharmaceutical industry is hindered by silos of information and a general lack of timely and reliable data as a result of historical business models and trading practices.

[8] identified eight SCM processes such as Customer Relationship Management (CRM), Customer Service Management(CSM), Demand Management, Order fulfillment, Manufacturing Flow Management, Supplier Relationship Management, Product Development and Commercialization, Returns Management. In the perception of [6], to robustly and reliably enhance

patient safety and to become more demand driven, the pharmaceutical supply chain needs a ubiquitous technology framework that includes: Item-level data management; Standards for available data and how it will be accessed and maintained; Data sharing infrastructure to accommodate cost efficient management and retrieval of data;

Reliable trust environment to determine who can access information, if information provided can be certified as authentic, and what can be done with information provided or accessed.

The pharmaceutical industry in Bangladesh is one of the fastest growing sectors, which is on the brink of attaining self-sufficiency in meeting the country's domestic demand. Bangladesh medicine sales reached Tk 3,700 crore three years ago, which nearly doubled to Tk 7,000 crore in 2010. The industry players forecast the growth trend would take the sales volume to Tk 10,000 crore in 2011. Square, Beximco, Eskayef, Incepta and Acme are the top five manufacturers by sales and growth rate [9]. This has been partly helped by the fact that Bangladesh, as a least developed country, currently enjoys some benefits in drug manufacturing as it is exempted by the Doha declaration from complying with patent protection until 2016 [10].

The study will seek to assess the supply chain management in pharmaceutical industries from retailers' perspective. No comprehensive study has so far been done in this regard. The proposed research will attempt to fill up this knowledge gap.

II. METHODOLOGY

The broad objective of this study is to evaluate the SCM of EK+F. The study follows cross section data analysis techniques and tools for identified different aspects of SCM of EK+F. The survey method of field investigation is utilized and standard tools are applied to achieve the objectives of this study.

A. Data Sources and Methods of Data Collection

1. Primary Source

The data from the primary sources have been gathered through field survey from the relevant respondents. Total number of respondents is 120. The respondents are retailers, executives, consumers and medical services officer. This method is employed to assess the stakeholders' opinions towards the process, benefits, views, knowledge, risks of the SCM of Eskayef Bangladesh

Ltd. The suggestion for achieving an effective supply chain are also taken from the respondents. The distribution of sample is shown in TABLE 1:

Table I
Distribution of Respondents

<i>Category of Respondents</i>	<i>Frequency</i>	<i>Location</i>	<i>Types of Sampling</i>
Retailers	60	Dhaka = 15 Chittagong =15 Khulna = 15 Rajshahi= 15	Purposive
Executives	30	Dhaka TDCL= 15 EK+F = 15	Purposive
Consumer	30	Dhaka	Random
N	120		

2. Secondary Sources

Secondary sources include published official statistics, reports, documents, laws, ordinances, books, articles, periodicals of different domestic and international agencies etc. Annual reports of Eskayef, different reports and statistics on the pharmaceutical sector in Bangladesh has been used.

B. Data Analysis and Presentation

Data processing

The collected data from secondary sources have been processed in an orderly manner so that it could be used for econometric modeling. The survey data from primary sources are arranged and scrutinized carefully on the basis of the completed questionnaire. Appropriate processing steps such as editing, coding, classification and tabulation are followed carefully. Data processing and model testing are performed by Ms-Excel, SPSS softwares.

C. Techniques of Data Analysis

To address the research objectives, this study utilizes a mixed methods approach comprised of quantitative and qualitative techniques. Questionnaire technique of survey method is used to collect primary data. Purposive and simple random sampling method are used to select 30 respondents who are directly involved in managing operations and supply chain of Eskayef Bangladesh Limited procurement; 60 from retailers and 30 from consumers (end customers).

A semi structured and pre-tested interview schedule has been used to collect data. Necessary correction, modification and alterations will be done accordingly. Data has been collected through personal interview during December 2015-January 2016. Respondents were asked to indicate on a five-point scale ranging from 1 to 5.

The responses of the respondents that were recorded in the interview schedule has been transferred into a master sheet for entering the data in the computer. The recorded data has been put into the computer for statistical analysis. The SPSS computer program was used for analysis of data. Various descriptive statistical measures such as number and percentage distribution, range, mean and standard deviation will be calculated. Simple tabular techniques will be used to explain the data. Minimum, maximum, mean, standard deviation and percentage for quantitative variables and T- test and percentage for qualitative variables are used to illustrate the results. Multiple response analysis, Factor analysis are also used to reflect the research objectives.

III.ANALYSIS OF FINDINGS

Primary data has been collected through field survey with respect to the research objectives of the study. This includes an examination of the perception of customers (retailers), consumers, executives of the SCM of Eskayef Bangladesh Limited , an assessment of the availability and affordability of good quality and efficacious pharmaceutical products, an evaluation of the challenges and constraints affecting the distribution process and adherence to SCM best practices for effective and efficient health care delivery.

A. Analysis of Data of the Retailers (Pharmacy Level)

Total sample size for retailer respondents is 60 equally drawn fifteen from each four major cities in Bangladesh. The distribution of respondents from the retail sector has been shown in Table II.

Table II
Distribution of Respondents (Retailers)

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Dhaka	15	25.0	25.0	25.0
	Chittagong	15	25.0	25.0	50.0
	Khulna	15	25.0	25.0	75.0
	Rajshahi	15	25.0	25.0	100.0
	Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2016

The reliability statistics of the sample is shown by Cronbach’s alpha which is 0.93.

Table III
Reliability Statistics

<i>Cronbach's Alpha</i>	<i>Cronbach's Alpha Based on Standardized Items</i>	<i>N of Items</i>
.903	.909	15

Source: SPSS Output of Field Survey, January 2016

The mean variance, co- variances and item-wise correlations are shown in Table IV:

Table IV
Summary Item Statistics

	<i>Mean</i>	<i>Min</i>	<i>Max</i>	<i>Range</i>	<i>Max / Min</i>	<i>Variance</i>	<i>N of Items</i>
Item Means	3.664	3.267	4.150	.883	1.270	.059	15
Item Variances	.912	.541	1.690	1.149	3.123	.076	15
Inter-Item Covariances	.349	-.090	.662	.753	-7.328	.027	15
Inter-Item Correlations	.401	-.103	.806	.909	-7.846	.036	15

Source: SPSS Output of Field Survey, January 2016

The Anova with Tukey’s Test for Non-additivity has been shown in the Table-IV and Table V. The F-statistic is significant at 5% level. The Hotelling’s T-Squared Test is found significant at 5% level.

Table V
Anova with Tukey’s Test for Nonadditivity

		<i>Sum of Squares</i>	<i>df</i>	<i>Mean Square</i>	<i>F</i>	<i>Sig</i>
Between People		341.996	59	5.797		
Within People	Between Items	49.929(a)	14	3.566	81.49	.000
	Residual Nonadditivity	.695(b)	1	.695	1.236	.267
	Balance	464.042	825	.562		
		Total	464.738	826	.563	
Total		514.667	840	.613		
Total		856.662	899	.953		

Grand Mean = 3.66, Source: Source: SPSS Output of Field Survey, January 2016

- 1) Kendall's coefficient of concordance $W = .058$.
- 2) Tukey's estimate of power to which observations must be raised to achieve additivity = 1.701.

Table VI
Hotelling's T-Squared Test

<i>Hotelling's T-Squared</i>	<i>F</i>	<i>df1</i>	<i>df2</i>	<i>Sig</i>
79.365	4.420	14	46	.000

Source: SPSS Output of Field Survey, January 2016

Table VII
Intra-Class Correlation Coefficients

	<i>Intraclass Correlation(a)</i>	<i>95% Confidence Interval</i>		<i>F Test with True Value 0</i>			
	<i>Lower Bound</i>	<i>Upper Bound</i>	<i>Value</i>	<i>df1</i>	<i>df2</i>	<i>Sig</i>	<i>Lower Bound</i>
Single Measures	.383(b)	.296	.491	10.302	59.0	826	.000
Average Measures	.903(c)	.863	.935	10.302	59.0	826	.000

Two-way mixed effects model where people effects are random and measures effects are fixed.

- (1) Type C intraclass correlation coefficients using a consistency definition- the between-measure variance is excluded from the denominator variance.
- (2) The estimator is the same, whether the interaction effect is present or not.
- (3) This estimate is computed assuming the interaction effect is absent, because it is not estimable otherwise.

Source: SPSS Output of Field Survey, January 2016

B. Retailers' Knowledge about Supply Chain Management

Retail Respondents' knowledge about SCM of EK+F is shown in the following Table 3.7. It is observed that 23.3% respondents have reported that they know the SCM very well followed by moderate knowledge (21.7%), sufficient

knowledge (20%), somehow knowledge (20%) and 15% respondents have poor knowledge about SCM.

Table VIII
Respondent's Knowledge About Scm

		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	poor	9	15.0	15.0	15.0
	Somehow	12	20.0	20.0	35.0
	Moderate	13	21.7	21.7	56.7
	Very Well	14	23.3	23.3	80.0
	Sufficient	12	20.0	20.0	100.0
	Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2016

C. Respondents' View about SCM

The results show that only 25% respondents reported that they identified SCM as Data Collection, Supplier, Purchasing, Warehousing, Stocktaking, Distribution. While 46.7% respondents viewed SCM as Supplier Selection, Purchasing, Warehousing, Stocking, Distribution, 12% viewed SCM as warehousing and distribution and only 6% considered SCM as distribution.

Table IX
Respondent's View About Scm

(1) Data Collection, Supplier, Purchasing, Warehousing, Stocktaking, Distribution

<i>Response</i>		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	yes	15	25.0	100.0	100.0
Missing	System	45	75.0		
Total		60	100.0		

(2) Supplier Selection, Purchasing, Warehousing, Stocking, Distribution

<i>Response</i>		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	yes	28	46.7	100.0	100.0
Missing	System	32	53.3		
Total		60	100.0		

(3) Warehousing, Distribution

<i>Response</i>		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	yes	12	20.0	100.0	100.0
Missing	System	48	80.0		
Total		60	100.0		

(4) Distribution

<i>Response</i>		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	yes	6	10.0	100.0	100.0
Missing	System	54	90.0		
Total		60	100.0		

Source: SPSS Output of Field Survey, January 2016

D. Benefits of SCM

Multiple Response Analysis (MRA) is carried out to identify the benefits of SCM. Only 2.8% respondents identified no impact of SCM, 38.1% respondents reported high impact of SCM, 31% viewed medium impact. In regards to heavy impact 20.7% respondents opined that SCM has heavy impact on the supply chain. The results are shown in Table X:

Table X
Impacts of The Benefits of Scm
(Retailers)

<i>Benefits(a)</i>	<i>Responses</i>		<i>Percent of Cases</i>
	<i>N</i>	<i>Percent</i>	<i>N</i>
No Impact	25	2.8%	41.7%
Moderate Impact	67	7.4%	111.7%
Medium Impact	279	31.0%	465.0%
High Impact	343	38.1%	571.7%
Heavy Impact	186	20.7%	310.0%
Total	900	100.0%	1500.0%

a Group

Source: SPSS Output of Field Survey, January 2016

Factor Analysis of the responses regarding the benefits of SCM reveals that shorter lead time has high mean (4.15) followed by reduced cycle time (3.97), Reduced waste (3.80), competitive advantage (3.83), reduced cost (3.78), greater supply chain visibility (3.72), reduced inventory (3.62) etc. The results are shown in Table X.

Table XI
Descriptive Statistics of the Indicators of SCM Benefits

<i>Indicators</i>	<i>Mean</i>	<i>Std. Deviation</i>	<i>Analysis N</i>
Superior Customer Value	3.27	1.300	60
Reduced Cost	3.78	.825	60
Cooperative Organizational Relationships	3.58	1.046	60
Effective Business Process	3.47	.929	60
Information Sharing	3.68	.965	60
Integrated Relationships	3.78	.958	60
Shorter Lead Time	4.15	.799	60
Reduced Waste	3.80	.755	60
Reduced Cycle Time	3.97	.736	60
Improve Responsiveness to Customer Requirements	3.63	1.025	60
Greater Supply Chain Visibility	3.72	.993	60
Enhanced Quality and Service	3.42	.979	60
Competitive Advantage	3.83	.905	60
Improved Supply Chain Communications	3.27	.972	60
Reduced Inventory	3.62	.993	60

Source: SPSS Output of Field Survey, January 2016

KMO and Bartlett's Test is used to measure sampling adequacy of influencing factors to examine the appropriateness of factor analysis. Here the KMO value is 0.768 reveals that the sampling adequacy of factor analysis. The Bartlett's test of Sphericity (Table XII) indicates that Chi-Square value i.e. 632.94 with 105 degree of freedom meaning that overall significant of the analysis.

Table XII
KMO and Bartlett's Test

<i>Kaiser-Meyer-Olkin Measure of Sampling Adequacy.</i>		
		.768
Bartlett's Test of Sphericity	Approx. Chi-Square	632.935
	df	105
	Sig.	.000

Source: SPSS Output of Field Survey, January 2016

(1) The Communalities of the Factors: Extraction Method: Principal Component Analysis is used find the importance of the factors. Here shorter lead time (0.857), reduced cycle time (0.838), reduced waste (0.825), improved supply chain communications (0.790), integrated relationship (.0.762), information sharing (0.691) are the most important factors for the benefits of SCM. The results are shown in Table XIII:

Table XIII
The Communalities of the Factors

<i>Indicators</i>	<i>Initial</i>	<i>Extraction</i>
Superior Customer Value	1.000	.282
Reduced Cost	1.000	.724
Cooperative Organizational Relationships	1.000	.602
Effective Business Process	1.000	.713
Information Sharing	1.000	.691
Integrated Relationships	1.000	.762
Shorter Lead Time	1.000	.857
Reduced Waste	1.000	.825
Reduced Cycle Time	1.000	.838
Improve Responsiveness to Customer Requirements	1.000	.649
Greater Supply Chain Visibility	1.000	.761
Enhanced Quality and Service	1.000	.709
Competitive Advantage	1.000	.745
Improved Supply Chain Communications	1.000	.790
Reduced Inventory	1.000	.548

Extraction Method: Principal Component Analysis.

The extraction sums of squared loadings that component 1 has 45.05% variance, component 2 has 17.65% and component 3 has 7.23% variance. .

Source: SPSS Output of Field Survey, January 2016

The total variance explained of the factor analysis is shown in Table 3.13. The initial eigenvalues for components 1, 2 and 3 are respectively 6.758, 2.65 and 1.09. It reveals that the component 1 has alone explained 45.07% of variance while component 2 has explained 17.66%, Component 3 has explained 7.27%. Other components are insignificant in terms of explaining total variance of the model. The rotation sums of squared loadings for component 1 is 4.82 (32.16%), 3.49 (23.28%) for component 2 and 2.18 (14.55%) for component XIV.

Table XIV
Total Variance Explained

<i>Component</i>	<i>Initial Eigenvalues</i>			<i>Extraction Sums of Squared Loadings</i>			<i>Rotation Sums of Squared Loadings</i>		
	<i>Total</i>	<i>% of Variance</i>	<i>Cumulative %</i>	<i>Total</i>	<i>% of Variance</i>	<i>Cumulative %</i>	<i>Total</i>	<i>% of Variance</i>	<i>Cumulative %</i>
1	6.758	45.057	45.057	6.758	45.057	45.057	4.824	32.159	32.159
2	2.648	17.656	62.713	2.648	17.656	62.713	3.491	23.276	55.435
3	1.091	7.273	69.986	1.091	7.273	69.986	2.183	14.551	69.986
4	.838	5.587	75.573						
5	.657	4.383	79.956						
6	.628	4.185	84.141						
7	.560	3.731	87.872						
8	.401	2.672	90.545						
9	.344	2.295	92.840						
10	.318	2.121	94.962						
11	.251	1.673	96.635						
12	.207	1.383	98.017						
13	.148	.984	99.001						
14	.093	.618	99.619						
15	.057	.381	100.000						

Extraction Method: Principal Component Analysis.

Source: SPSS Output of Field Survey, January 2016

The Scree Plot for Principal Component Analysis is shown in Figure 2:

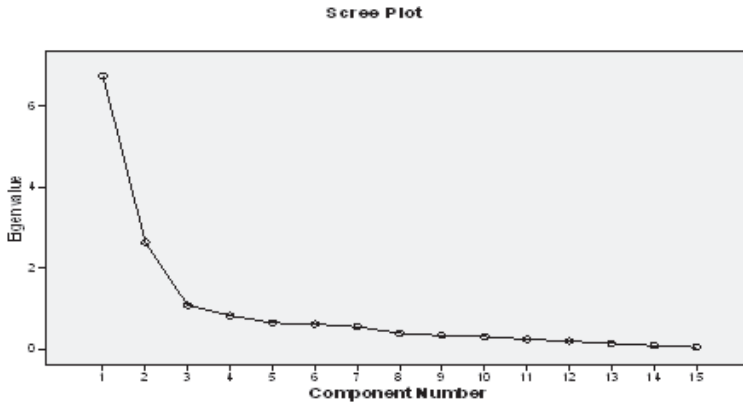


Figure 2: Scree plot for principal component analysis

E. Component Matrix Analysis

The weight of each factor in each component is shown in Table XV:

Table XV
Component Matrix (A)

<i>Indicators</i>	<i>Component</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
Superior Customer Value	.492	-.148	.135
Reduced Cost	.737	-.404	.137
Cooperative Organizational Relationships	.650	-.300	.300
Effective Business Process	.738	-.398	.104
Information Sharing	.698	-.430	.139
Integrated Relationships	.733	.474	.003
Shorter Lead Time	.646	.250	-.614
Reduced Waste	.753	.492	.125
Reduced Cycle Time	.727	.383	-.404
Improve Responsiveness to Customer Requirements	.680	.430	-.031
Greater Supply Chain Visibility	.757	-.349	-.258
Enhanced Quality and Service	.772	-.282	.184
Competitive Advantage	.656	-.519	-.214
Improved Supply Chain Communications	.432	.633	.450
Reduced Inventory	.471	.546	.168

Extraction Method: Principal Component Analysis. a 3 components extracted.

From the component matrix it is found that 12 factors have high influence on the benefits of SCM. These are enhanced quality and service (0.772), greater supply chain visibility (0.757) reduced waste (0.753), effective business process (0.737), reduced cost (0.737), reduced cycle time (0.727), information sharing (0.698), improve responsiveness to customer requirements (0.680), competitive advantage (0.656), cooperative organizational relationships (0.650). Components 2 and 3 are not important as most of the factors have negative coefficients.

The rotated weight of each indicator for each component is shown in Table XVI:

Table XVI
Rotated Component Matrix(A)

<i>Indicators</i>	<i>Component</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
Superior Customer Value	.490	.194	.066
Reduced Cost	.832	.126	.126
Cooperative Organizational Relationships	.742	.225	-.038
Effective Business Process	.822	.118	.156
Information Sharing	.821	.087	.102
Integrated Relationships	.248	.738	.394
Shorter Lead Time	.176	.279	.865
Reduced Waste	.280	.811	.298
Reduced Cycle Time	.204	.505	.736
Improve Responsiveness to Customer Requirements	.228	.665	.394
Greater Supply Chain Visibility	.719	.022	.494
Enhanced Quality and Service	.793	.256	.120
Competitive Advantage	.761	-.142	.382
Improved Supply Chain Communications	.031	.882	-.105
Reduced Inventory	.047	.724	.147

Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

a Rotation converged in 5 iterations.

Table XVII shows the component transformation. Here component 1 has more weight as compared to component 2 and component 3.

Table XVII
Component Transformation Matrix

<i>Component</i>	<i>1</i>	<i>2</i>	<i>3</i>
1	.742	.515	.430
2	-.627	.760	.172
3	.238	.397	-.887

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

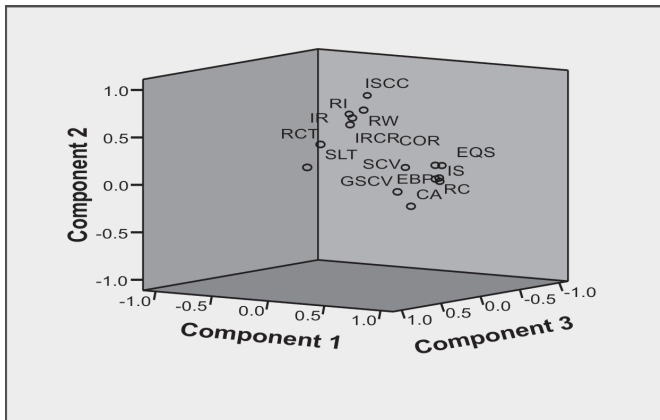


Figure 3: Component Plot in Rotated Space

The component score coefficients are shown in Table XVIII:

Table XVIII
Component Score Coefficient Matrix

<i>Indicators</i>	<i>Component</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
Superior Customer Value	.118	.044	-.088
Reduced Cost	.206	-.010	-.091
Cooperative Organizational Relationships	.208	.072	-.222
Effective Business Process	.198	-.020	-.063

<i>Indicators</i>	<i>Component</i>		
	<i>1</i>	<i>2</i>	<i>3</i>
Information Sharing	.209	-.020	-.097
Integrated Relationships	-.031	.193	.075
Shorter Lead Time	-.122	-.102	.557
Reduced Waste	-.006	.244	-.021
Reduced Cycle Time	-.099	.018	.399
Improve Responsiveness to Customer Requirements	-.034	.164	.097
Greater Supply Chain Visibility	.109	-.136	.235
Enhanced Quality and Service	.192	.045	-.119
Competitive Advantage	.148	-.177	.182
Improved Supply Chain Communications	-.004	.378	-.297
Reduced Inventory	-.041	.254	-.071

Extraction Method: Principal Component Analysis.

Rotation Method: Varimax with Kaiser Normalization.

Component Scores.

Eigenvalues of the three functions and Wilk's Lambda is shown in Table 3.19. Function 1 has higher eigenvalue (2.041) and 65.2% variance of function 1 is explained while the eigenvalue for function 1 is estimated at 0.719 and 23.0% variance is explained. The eigenvalue of function 3 is 0.371 and only 11.80% variance is explained.

F. Successfulness of SCM of SK+F (Retailers)

The successfulness of SCM as reported by retailers is shown in Table 4.18. About 30.0% respondents reported that SCM of SK +F is successful, 25% as very successful, 21.7% as successful somewhat. Only 8.3% respondent reported that SCM is not successful at all, 15% reported as not successful.

G. Risk Responses of Retailers

About 65% of the retailer respondents reported supply and supplier risks, 41.7% as organization and strategies risks, 68.3% as financial risks, 75% as logistic risks, 38.3% as market issues, 68.33% as regulatory risks, 61.7% as inventory risks, 56.7% counterfeit risks. The results are shown in Table XX.

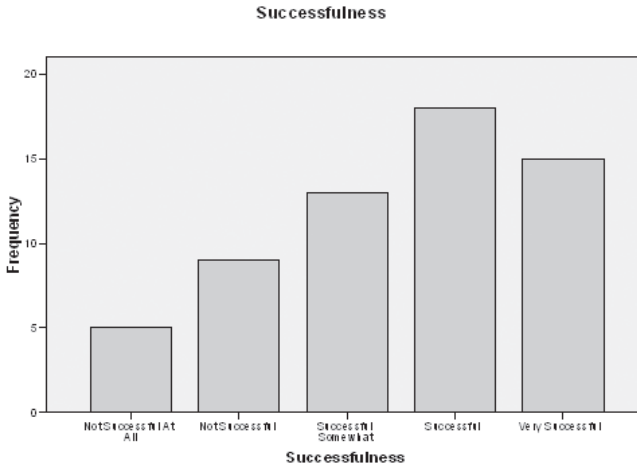


Table IX
Successfulness of SCM of SK+F (Retailers)

<i>Indicators</i>		<i>Frequency</i>	<i>Percent</i>	<i>Valid Percent</i>	<i>Cumulative Percent</i>
Valid	Not Successful At All	5	8.3	8.3	8.3
	Not Successful	9	15.0	15.0	23.3
	Successful Somewhat	13	21.7	21.7	45.0
	Successful	18	30.0	30.0	75.0
	Very Successful	15	25.0	25.0	100.0
	Total	60	100.0	100.0	

Source: SPSS Output of Field Survey, January 2016.

Table XX
Supply Chain Risks (Retailers)

<i>Sl</i>	<i>Risks</i>	<i>Yes</i>		<i>No</i>	
		<i>Frequency</i>	<i>Percent</i>	<i>Freq</i>	<i>Percent</i>
1	Supply and Supplier Risks	39	65	21	35
2	Organization & Strategic Risks	25	41.7	35	58.3
3	Financial Risks	41	68.3	19	31.7
4	Logistic Risks	45	75	15	25
5	Market Issues	23	38.3	37	61.7
6	Regulatory Risks	41	68.3	19	31.7
7	Inventory Risks	37	61.7	23	38.3
8	Counterfeit Risks	34	56.7	26	43.3

Source: SPSS Output of Field Survey, January 2016.

From the above analysis it is evident that logistic risks is the most important risks followed by regulatory risks, financial risks, supply and supplier risks, inventory risks, counterfeit risks, organization and strategies risks and market issues.

H. Recommendation for Effective and Efficient Supply Chain (Retailers)

The most important recommendation form the retail responses is provide more affordable drugs (26.7%). Customer relationship management is also found as an important recommendation (20%). The other recommendations are decentralized distribution system

(16.7%), improve data and communication system (13.3%, competitive price(8.3%), provide more logistics(6.7%), strengthen management structure(5%) and open wholesale and retail branches (3.3%).

Table XXI
Recommendation for Effective and Efficient Supply Chain (Retailers)

		<i>Responses</i>		<i>Percent of Cases</i>
		<i>N</i>	<i>Percent</i>	
RES(a)	Open Wholesale and Retail Branches	2	3.3%	3.4%
	Provide More Affordable Drugs	16	26.7%	27.1%
	Strengthen Management Structure	3	5.0%	5.1%
	Improve Data and Communication System	8	13.3%	13.6%
	Competitive Price	5	8.3%	8.5%
	Provide More Logistics	4	6.7%	6.8%
	Customer Relationship Management	12	20.0%	20.3%
	Decentralized Distribution System	10	16.7%	16.9%
Total		60	100.0%	101.7%

a Dichotomy group tabulated at value 1.

Source: SPSS Output of Field Survey, January 2016.

IV. RECOMMENDATIONS AND CONCLUSION

Recommendations

From the analysis of the results obtained from the surveys, the following recommendations have been made to enable 'Eskayef Bangladesh Limited' to achieve its main vision is to lead the national pharmaceutical market, to be recognized as a multinational conglomerate from Bangladesh and stand out

as a model of efficiency & trust to our collaborators, consumers, health care professionals & society. These include:

1. 'Eskayef Bangladesh Limited' should employ more marketing staff in order to effectively distribute its products to a wider customer base.
2. 'Eskayef Bangladesh Limited' should continue to produce the high quality pharmaceuticals products but at a less production cost so the prices of its products would be cheaper to ensure that low level income earners could also patronize them since the poor in Bangladesh form a larger proportion of the population.
3. To help the distribution chain, 'Eskayef Bangladesh Limited' should occasionally organize education seminars for communities to help them know the usage of drugs and the possible adverse effects of their abuse. It is well known in Bangladesh, that not all sick people go to the hospital or ask their pharmacists for correct medication, they rather purchase medicines from drug peddlers and unapproved retailers.
4. 'Eskayef Bangladesh Limited' should improve on its data collection and communication systems. These would enhance information flow within the Company and promote the implementation of new strategies and directives. It would also help to reduce its bad debts since customers can be followed up effectively to pay whatever they purchase. Good data collection system would help it improve on its forecasting system to reduce the shortages it encounters in order to effectively meet the needs of its customers.
5. 'Eskayef Bangladesh Limited' should buy more distribution vans to improve its supply chain system.
6. Government should discourage foreign pharmaceutical companies from considering and/or taking Bangladesh as a dumping site for the substandard or disapproved products by other national food and drugs authorities.

CONCLUSIONS

From the study it can be concluded that 'Eskayef Bangladesh Limited' has an effective supply chain management strategy even though there is still room for improvement. 'Eskayef Bangladesh Limited' provides good quality and efficacious medicines that are affordable and available to all level of income earners in Bangladesh. 'Eskayef Bangladesh Limited' does this by importing

both patented and generic medicines from the world's leading pharmaceutical companies so nationals from all over the world in Bangladesh can have their trusted brands of medicines. Again, 'Eskayef Bangladesh Limited' produces some of the medicines locally from an ultra modern factory plant in Tongi and distributes them through its own wholesales and other members of the pharmaceutical distribution chain to make sure accessibility of good quality and efficacious medicines at affordable prices.

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