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Impact of Product Nature on Supply Chain in the Global Market: An Analysis of Bangladeshi RMG

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Abstract: Globalization and easy access to market have made the supply chain management process competitive with the demand of providing modern products at the shortest possible time. The product life-cycle is decreasing tremendously with the ever increasing demand of varieties ofproducts. Ready made garment (RMG) has occupied more than 75% of export earning of Bangladesh and in the coming days supply chain management will be the key to meet more competency in the market place with the ever-increasing competition. In the supply chain management, necessary of Import, managing inventory, moving products across borders, managing margin of safety, maintaining economic Order Quantity (EOQ) and outsourcing are very crucial. In Bangladesh, the organization managing good supply chain andmanaging appropriate forecast of demand are expanding. This paper deals with the importance of supply chain management with appropriate forecast of Products nature to accelerate growth and expansion of market of RMG industry of Bangladesh.

Keywords: Supply Chain Management, Nature of Products, Lead Time, Growth, Market

1. Introduction

In the business world, Every organization runs for profit. Only final customer uses the products to fulfill demand. So, whatever the position of the organization (manufacturer, wholesaler, retailer), it needs sound supply chain management to be successful in the competitive world market. As, In this globalized world, every country try to get both competitive and comparative advantage in production and export the excess products from where it has comparatively high advantage to produce that products and generate revenue. Bangladesh is one of the developing nations in the world generate more than 75% of its export revenue from RMG sector. A sound supply chain management can make sure the growth of this sector by ensuring in time delivery of order. In time delivery is very important to make sure proper growth of the organization and industry as well. RMG of Bangladesh has started expanding in 1970s and boomed in 1990s. Cheap labor, less complicated technology, domestic fabric production, lead time management etc provide the opportunity to expand the RMG industry of Bangladesh rapidly. In the era of globalization, many firms are developing and maintaining strong supply chain management relation with both supplier and customer to offer best value to their customers. Because, RMG's managing good supply chain can also manage growth very well. As the market conditions are changing and organizations are looking for best value and long-term relationship. Appropriate Supply chain management not only Make sure on time supply of order but also provides the opportunity to reduce cost of products and achieve competitive advantage over the competitor to achieve competitiveness in the market place. Prompt response is essential to keep existing customer and attract new customer. To achieve this goal, the concept of supply chain management is very crucial for RMG industry of Bangladesh. With the globalization of operations and having a global procurement network can supply chain support and react to customers' needs. In the modern business structure no business can stay as autonomous entity. Now business has entered in the era of internetwork competition. There has no competition between business versus business or brand versus brand in real term but there has competition between supply chain versus supply chain. So, success of the business will be dependent on how strong the management of supply chain the organization support.

2. Purpose of the Study

The main purpose of the study is to find out the impact of managing supply with nature of products to accelerate growth. The study has also some secondary purpose:

(1) The relationship between supply chain management and reduction of lead time to develop good supply chain network for expansion.
(2) Determination of supply chain on the basis of Functional and Innovative Products to keep uphigh growth.
(3) Creation of loyalty among the supplier and customer through strong supply chain network.

3. Literature Review

3.1. Supply Chain Management

Supply chain Management is the flow of goods, services, money, information from different entities like supplier, customers, manufacturers, wholesaler, retailers etc. A supply chain is a system with the involvement of people, technology, activities, information and resources with a view to moving products or services from supplier to customers. ‘‘Supply chain management is the chain linking each element of the manufacturing and supply process from raw materials to the end user, encompassing several organizational boundaries.’’ scott and westbrook (1991) and new and paune (1995). Houlian (1987and 1988) provided definition of SCM as a technique of combining various key departments such as production, marketing, finance and HR of an organization so that this unified chain links tier-one distributors and suppliers to amplify performance by providing good and services to the final customers on time. Farley agreed (1997) that supply chain management (SCM) is a process focusing on how organizations utilize their supplier’s products, process, technology and capability to achive competitive advantage. According to GSCF supply chain management is ‘’the integration of key organizational process from end-user to original suppliers who provide technology, information, inputs of production that add value for customers and other stakeholders’’. Chan (2003) argued that the aim of supply chain management is to gain advantages in terms of gaining cost advantages over competitors and providing better customer services. Ganeshan and Harrison (1995) has argued that SCM is a network facilities and Distribution options that perform the functions of procurement of materials, transformation of those materials into intermediate and /or finished products and the distribution of those finished products to customers. So, supply chain management can be termed as business process of the organization. chopra and Meindle (2001) favored Harrison’s view and highlighted that ‘’A supply chain is the combination of all stages involved directly or indirectly, in fulfilling a customer request’’. According to Novak and Simco (1991) ‘’The Supply chain management covers the flow of goods from supplier through manufacturer and distributor to end-user’’. So, in a word supply Chain Management can defined as the process which determines the existence of business of the organization.

3.2. Supply Chain Management of RMG

The world is showing a very dynamic characteristics of products life cycle of RMG products. The styles, designs and fashions are changing everyday. The fashions and designs new today are becoming obsolete tomorrow. This life cycle is also decreasing with high fluctuations of end demand. so, it is very difficult to manage and keep up continuous supply of garments product to last customers (Sen.2008).lam and Postle (2006) argued that apparel industry of Bangladesh are not generally aware of Supply Chain Management and industrial benchmark. RMG industry is one of the volatile and competitive business industries needs strong supply chain Management to become successful in the business. Islam (2013) highlighted that Apperal supply Chain is a matter of new orders, raw materials supply, production process and outbound logistics related to offer final goods to customers by the use of strong supply chain and mentioned that Bangladesh garments are trying to reduce lead time to deliver orders of foreign customers in time. In RMG industry Supply chain management is the most complex having the characteristics of global supply chain. Backward and forward integration of supply chain can insure prompt response to make sure on time delivery of order. RMG industries of Bangladesh are trying to reduce waste by effective supply chain by reducing duplication, harmonizing operations and systems at the same time enhancing quality of products. Christopher (1998)in his opinion “Induvudual Business can no longer compete as solely autonomous entity, but rather as supply chain”. Sapiro (2001, P.6) “Supply Chain Includes many to many relationship between vendors, plants, distribution, centers and markets”.

3.3. Conceptual Framework of SCM for RMG

Textile is one of the sectors where in time delivery is the main competitive factor and current competition in the RMG industry involves entire supply chain. The Supply chain Management consists of different firms and member of firms and the inter relationship among them to offerbetter value to customers. The conceptual framework of supply chain Management focuses on interrelated nature of members firm. The supply chain management includes closely related elements:

(1) The supply chain network structure,
(2) The supply chain business process and
(3) The supply chain management components.

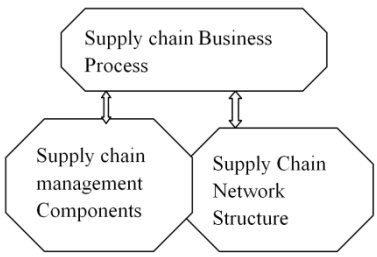

Figure 1. *Conceptual framework.*

Supply Chain Business Process are the activities the produces value to customers. The Supply Chain Network structure is the combination of inter dependent firms. Supply Chain Management Components are the activities of the management to run business process of the organizations. Each elements of the framework are interrelated and without one total system become obsolete. Relationship with all firms are not important for RMG industry but a proper relationship is important that best fits the specific set of circumstances.

According to Cooper M. C., and Gardner J. T. (1993). Moreover, there are three structural dimensions of supply chain management of RMG industry horizontal structure, vertical structure and horizontal place of the local company within the end point of supply chain. Horizontal refers to the number of levels in the supply chain. It may be long or short depending on the number of levels. Vertical structure means the number of customers/suppliers in each levels. RMG industry of Bangladesh is trying to keep up strong vertical structure to get available raw materials supply and offer best value to customers. The horizontal position within the supply chain means the position at or near the initial source of supply, be at or near to the final customer or somewhere between the two.

3.4. Problem Statement

RMG industry has been contributing to the economy of Bangladesh from 1970s and now the contribution is highest in terms of export. Now RGM contributes more than 75 percent of export revenue of Bangladesh. Despite the highest contribution of RMG industry to total GDP, there has not so many in-dept research on SCM for the RMG sector of Bangladesh. Asgari and Haque (2013) argued that an integrated supply chain can offer competitive advantage to RGM industry of Bangladesh. An integrated supply chain can cut cost, increase productivity and provide the opportunity to respond to the ever changing customer demands. B. Asgari and M.A. Hoque (2013) The final customers of the supply chain management process is very time sensitive and Bangladeshi RMG industry basically provides final customer services in the foreign market, a short lead time is needed to win more orders from buyers besides quality and price. Nuruzzaman, A. Haque and R. Azad (2010) The RMG of Bangladesh is highly dependent on Imported raw materials. About 90 percent of woven fabrics and 60 percent of knit fabrics are imported to manufacture garments products for export. It takes a bulk amount of lead time to process an order. M.S. Islam (2012) in a study highlighted that the lead time varies from 90 days to 120 days to export apparel products from Bangladesh. Now, Bangladesh is the second largest RMg exporting Country in the world after china. China has achieved that position due to strong supply chain network in the GMR industry. In a case study of china, it was found that china got an order to deliver a foreign with a time that was close to shipment but china started to produce products in the ship and start journey for the destination. When the ship reached the destination, they made the order ready. Chain is very time sensitive to meet orders and keep up supply chain in that way. Bangladesh has achieved the 2nd position through cheap labour but exchange rate between dollar and Indian rupee is a becoming a threat for Bangladesh. Moreover, The world is rapidly moving to capital intensive technology of production from labour intensive technology of production. At the same time Production process is becoming automated for most of the industry. under such situation, Bangladesh is in a threat to lose market of RMG products. Because, Automation will reduce the necessity of labour and decrease lead time. Moreover, political turmoil, labour unrest, natural disasters are also threat to on time delivery of Orders for RMG products of Bangladesh. under such circumstances, Strong supply chain would be the only way to be competitive in the world market and keep market for Bangladeshi RMG industry. The Nature of products the market demand is also neglected in RMG industry. The innovative products are the main source of revenue for the RMG products.

Nature of Demand for innovative and functional products are shows in the table below:

Table 1. *Nature of demand for innovative and functional.*

Nature	Functional	Innovative
Aspect of demand	Predictable Demand	Unpredictable Demand
Product life cycle	More than 2 years	Maximum 1year
Contribution margin (%)	5-20	20-60
Products variety	Low	High
Average forecst error (percent)	10	40-100
Average stock out Rate(%)	1-2	10-40
Average Season markdown(%)	0	10-25
lead time required for made-to-order products	6 months to 1 year	1 day to 2 weaks

Source: Fisher and Rahman (1994)

A multi-tire supply chain to be avoided at the same time number of supplier to be increased in each tire to tackle all unexpected and expected situations. Process, Management and technology network are the factors effecting supply chain management. According to Fisher (1997) companies failed in supply chain management because of mismatch in supply chain strategy and demand of the products. Based on the demand fisher divided products into functional and innovative products. Functional products have a stable and predictable demand with long life cycle. The basic need items are typically termed as functional products. Innovative products have short life cycle with unstable and unpredictable demand. innovative products forces steady stream of innovations for high profit margin.

With the high profit margin and changing demand, innovative products require different supply chain than do functional products. Fisher (1997) Cost should not be the

focus for innovative products but faster delivery should be the focus of Innovative products.There is a problem in selecting supply chain on the basis of functional and innovative products. Textiles products in the early life cycle are in the category of innovative products but at the end of the life cycle it becomes functional products. As RMG products are both innovative and functional products, it needs special focus from the supply chain manager to determine what should be the supply chain strategy to be profitable in choosing that strategy.00 different organizations' people were selected and interviewed to get idea about the impact of product nature in supply chain management and contribution of supply chain in growth in different ways. The opinion of them is very similar. According to Fisher (1997) afashion new today becomes out of date within 2 weeks but companies need to focus on profit for long-term existence and achieve reputation in the market place.That is why, right forecasting of the life cycle and supply chain are the key challenges for supply chain manager. A responsive supply chain can meetunpredictabledemand of customers and useful to introduce innovative products in thelocal markets. But Bangladesh lacks strong responsive supply chain in fulfilling western world market, as most firms are dependent on imported raw materials. Bangladesh Government has introduced different incentives programs like

Export development fund facilities, Cash incentives in local import of Raw materials are the motivators for local manufacturers to import or collect basic raw materials to manufacture cotton, accessories etc. The goal is to keep products available keeping low products obsolete. It is very difficult to respond to market signals and to develop an exact demand based on current information but it is possible through historical information in case of seasonal products.

Fisher and Rahman (1994) found that conventional forecasting has an average error of 55 per cent based on a team of export merchants. But forecasting based on the sales data, can improve forecasting error with an average error of 8 Per cent.Supply chain selection process also need to focus on Functional and innovative products. Each organization has to select and manage supply chain on the basis of the products whichhas demand in the market. Efficiency Supply Chain Process and Responsive supply chain Process are two different ways to manage supply chain for two different demand products.

3.5. Hypothesis

Some hypothesis has been developed for the study:

Ho1:Supply chain management is important for the growth of GRM industry of Bangladesh.

Ho2: Supply chain is related with the properforecast of Products.

Ho3: If there has proper supply chain management in RMG then industry will expand its market.

4. Methodology of the Study

The Study is conducted with standard method of research. Research is defined as systematic and scientific search for knowledge on specific knowledge.It is an art of scientific investigation. Caffid of woody defined research as defining and redefiningproblems, formulating hypothesis or suggesting solutions and reaching conclusions. This Study is conducted with study, experiment, observation, analysis, comparison and reasoning. with some standard process.

4.1. Sources of Data Collection

This study is based on primary and secondary data. Primary data is collected through interview of different respondentsof different RMG industry.Also from Different Import and Export LC of some RMG industry. The Secondary data is collected through BGMEA web site, magazines, journals, newspapers, research work, books,, internet etc.

4.2. Methods of Data Collection

Questionnaire, interview and survey method were employed to collect data. Both Direct and indirect (mailing, telephone communications) are used to collect data from the respondentaccording to their preference. Mailing communication provides enough time to the respondentto give answers to the Close ended questions. The respondentsare given enough time to get most accurate response for thequestions has given to them. Rrespondentshave given time to think about theirown company and industry and give the most accurate answers.

4.3. Sampling

A sample of 100 respondents were randomly selected from among 4296 garments factories across the country. The sampling is done mainly from Dhaka, Chittagong, Narayangonj, Savar and Gazipur to collect data.. As the Target of the study is to find out the relationship between managing supply chain and growth of RMG. That is why, the best performers are giving priority tomake sure that the sample is valid. The study is basically is general one that is why special focus has been imposed to collect data. At the same time questions from different angel of supply chain has been developed on supply chain to get ins and outs of RMG growth relating to supply chain.

4.4. Data Collection Sampling and Analyzing Tools

The data collection process includes only close ended questionnaire. Close ended questions are used to get the opinion of interviewers about supply chain management and its contribution to the industry. Different statistical tools have been used to analyze data and get the most accurate picture of supply chain and give suggestions. Methodology: To analyze the data collected different statistical tools have been used. Pearson’s correlation test, regression coefficient, T-test, Z-test, jerque-bera test etc have been used to find out the relationship of different variables and their impact on RMG growth and market expansion with the consideration of Nature of demand and interrelation among the players of

supply chain management system. For Study purpose, the first consideration is given to supply chain management and lead time of production in the RMG industry. Cause-effect relationship is used to analyze data to get the real scenario of products nature (Innovative and regular) in supply chain to be competitive in the global market.

5. Analysis and Discussion

Ho1: Supply chain management is important for the growth of RMG industry of Bangladesh.

Table 2. *Pearson's Correlation matrix.*

Variables	Supply chainmanagementis related to RMG growth	Supply chain Management canreduce lead time
Supply chainmanagementis related to RMG growth	1	0.997
Supply chain Management canreduce lead time	0.997	1

In the pearson's correlation matrix, pearson's r is 0.997. This figure is positive and close to 1 which represents a very strong positive relationship between Growth of RMG and reduction of Led time in supply chain management. This means that the changes in value of one variable is strongly correlated with the change in value of other variable. In other words, the change in lead time in supply chain results in the changes in growth of rate of RMG and vise-versa.

The value ofPearson's correlation r is 0.997 is close to 1 represents very strong, liner and straight relationship between Supply chain and lead time to accelerate growth. The company with reduced lead time in supply chain management can can make sure in time delivery of orders resulted in growth of the company. The correlation matrix can tell us the variation's in lead time in supply chain management.The R^2 is the statistical measure of how close the data are to the fitted regression line. The R^2 represents variability accounted for by the independent variable. more than, 99 percent of the variability in the lead time changes occurs due to changes in supply change management. The higher the value of R^2 represents the higher the relationship between growth of RMG and changes in lead time which it the outcome of supply chain management system.Though Scholars argued that it is dependent on how strong the supply chain the company maintains.The first hypothesis of the analysis was to determine that Good supply chain management is important for the growth of RMG. The strong relationship represents by r=0.997 has proven that supply chain management reduce lead time and accelerate growth of RMG. the view is also supported by the analysis of ANOVA where the value of F=451.09 at.005% significance. so, it is implies that when there is a good supply chain management accelerate.

Table 3. *Regression coefficient.*

Model	R	R^2	Adjusted R^2	MSE	RMSE
1	3	0.993	0.991	8.862	2.977

Table 4. *Analysis of variance (ANOVA).*

Source	DF	Sum of Squares	Mean Squares	F	Pr>F
Model	1	3997.415	3997.415	451.09	0
erroe	3	26.585	8.862	-	-
corrected	4	4024			

Jarque-Bera Normality Test (Correlation): JB test of Supply chain management is related to RMG growth and supply chain management can reduce lead time shows JB=1.779 and P-value=0.4109. So, There has greater JB Normality data. The Relationship Between Supply chain management can Cut lead and Supply chain management is related to RMG growthshows that JB=0.76737. So, There has Greater JB Normality Data.

Ho2: The appropriate forecast of Products nature accelerate productivity, products diversification and Growth. The Pearson's Correlation between the impacts Products Nature has impact on supply chain whether Good Supply chain increase productivity is r=0.989. There is a very strong positive correlation between productivity and supply chain on the basis of products nature. This means that the changes in one variable will influence the other variable. Determining supply chain on the basis of products nature will increase productivity of the organizations. About 96.6 percent of the variability in productivity the factory may experience if supply chain is not considered with the changing nature of products. The model indicates the higher proportion of variability in the mean of supply chain in changing of products nature in the market at 5% significant level.

Table 5. *Correlation Matrix (pearson)n.*

Variables	Product Nature has an impact on supply chain	Effective Supply chain has impact on recent growth of RMG in Bangladesh	Good supply chain will Ensure Products diversification of Bangladeshi RMG	Interrelationship is the main way to Ensure appropriate supply Chain
1)Product Nature has an impact on supply chain	1	0.995	0.994	0.984
2)Effective Supply chain has impact on recent growth of RMG in Bangladesh	0.995	1	1.000	0.993
3)Good supply chain will Ensure Products diversification of Bangladeshi RMG	0.994	1.000	1	0.994
4)Interrelationship is the main way to ensure appropriate supply Chain	0.984	0.993	0.994	1

Variables	Product Nature has an impact on supply chain	Effective Supply chain has impact on recent growth of RMG in Bangladesh	Good supply chain will Ensure Products diversification of Bangladeshi RMG	Interrelationship is the main way to Ensure appropriate supply Chain
5)Good Supply Chain Increase Productivity:	0.989	0.998	0.997	0.986
6)If Nature of products is considered, then Company will grow fast.	0.985	0.980	0.981	0.987

Table 5. *Continued.*

Variables	Good Supply Chain Increase Productivity	If Nature of products is considered, then Company will grow fast.	Good Supply Chain Increase Productivity:	If Nature of products is considered, then Company will grow fast.
1)Product Nature has an impact on supply chain	0.989	0.985	0.989	0.985
2)Effective Supply chain has impact on recent growth of RMG in Bangladesh	0.998	0.980	0.998	0.980
3)Good supply chain will Ensure Products diversification of Bangladeshi RMG	0.997	0.981	0.997	0.981
4)Interrelationship is the main way to ensure appropriate supply Chain	0.986	0.987	0.986	0.987
5)Good Supply Chain Increase Productivity:	1	0.964	1	0.964
6)If Nature of products is considered, then Company will grow fast.	0.964	1	0.964	1

(A)Products Nature has impact On supply chain(x) and Good Supply chain increase productivity(y)

Table 6. *Regression Coefficient for Ho2 (A).*

Model	R	R^2	Adjusted R^2	MSE	RMSE
1	3	0.966	0.955	30.491	5.522

Predictor(Constant)x and (Variable) Y

Table 7. *T-test for Ho2 (A).*

DF t critical	value	p-value (Two-tailed)
8	2.306	1

T-test for two independent sample/ Two-tailed test: 95% confidence interval on the difference between the mean:(-36.672, 36.672).

As P value is greater than alpha=0.05, we can nor reject null hypothesis. the risk to reject null hypothesis is Ho2 while it is true is 100%. Two-tailed test at 95 percent cconfidence interval on the difference between means represent critical value t=2.306 and p-value (two-tailed) at 5 percent significance level is 1.00. So, supplying inputs on the basis of the nature of products produced has impact on increasing productivity of the process. The Pearson's Correlation between the impacts of Product Nature has an impact on supply chain and Good supply chain will make sure Products diversification of Bangladeshi RMG is 0.994. There is a very strong positive correlation between products diversification and supply chain on the basis of products nature. This means that the changes in one variable will influence the other variable. Determining supply chains on the basis of products nature will accelerate products diversification of the organizations. About 97.7 percent of the variability in the products diversification of the factory may experience if supply chain is not considered with the changing nature of products. The model indicates the higher proportion of variability in the mean data supply chain in changing of products nature at 5%significant level. Two-tailed test at 95 percent confidence interval on the difference between means represent critical value t=2.306 and p-value (two-tailed) at 5 percent significance level is 1.00. So, supplying inputs on the basis of the nature of products produced has impact on products diversification of the market.

(B) Product Nature has an impact on supply chain (X) good Supply chain will Ensure products diversification of Bangladeshi RMG (Y).

Table 8. *Regression Cofficient for Ho2 (B).*

Model	R	R^2	Adjusted R^2	MSE	RMSE
1	3	0.966	0.955	30.491	5.522

Predictor(Constant)x and (Variable) Y

Table 9. *T-test for Ho2(B).*

DF t critical	value	p-value (Two-tailed)
8	2.306	1

T-test for two independent samples / Two-tailed test: 95% confidence interval on the difference between the mean:(-43.129, 43.129) at 5% significance level.

As P value is greater than alpha=0.05, we can nor reject null hypothesis. the risk to reject null hypothesis is Ho2 while it is true is 100%. The Pearson's Correlation between the impacts of Products Nature has impact On supply chain whether

Effective Supply chain has impact on recent growth of RMG in Bangladesh is r=0.995. There is a very strong positive correlation between recent growth of RMG in Bangladesh and supply chain on the basis of products nature. This means that the changes in one variable will influence the other variable. Determining supply chain on the basis of products nature will accelerate growth of RMG in Bangladesh.About 97.7 percent of the variability in the growth of the factory may experience if supply chain is not considered with the changing nature of products. The model indicates the higher proportion of variability in the mean data supply chain in changing of products nature at 5% significance level. Two-tailed test at 95 percent confidence interval on the difference between means represent critical value t=2.306 and p-value (two-tailed) at 5 percent significance level is 1.00. So, supplying inputs on the basis of the nature of products produced has impact on growth of RMG in Bangladesh.

(C) Products Nature has impact On supply chain (X)and Effective Supply chain has impact on recent growth of RMG in Bangladesh (Y)

Table 10. *Regression Coefficient for Ho2(C).*

Model	DF	R^2	Adjusted R^2	MSE	RMSE
1	3	0.977	0.97	31.34	5.594

Predictor(Constant)x and (Variable) Y

Table 11. *T-test for Ho2(C).*

DF t critical	value	p-value (Two-tailed)
8	2.306	1

T-test for two independent samples / Two-tailed test: 95% confidence interval on the difference between the Means:(-36.672,36.672) at 5% significance level.

As P value is greater than alpha=0.05, we can not reject null hypothesis. the risk to reject null hypothesis is Ho2 while it is true is 100%.

Ho3: If there has appropriate supply chain management in RMG then industry will expand its market. The Pearson's Correlation between the impacts of Good supply chain will Make sure Products diversification of Bangladeshi RMG andEffective Supply chain has impact on recent growth of RMG in Bangladesh is r=1.00. There is a very strong positive correlation between recent growth of RMG in Bangladesh and products diversification through good supply chain. This means that if supply chain changes that will influence the rate of products diversification and growth of RMG strongly. Supply chain management strength will Make sure growth by providing diversified products to customers and Make sure market expansion. Regression coefficient represents about 99.9 percent of the variability in the growth and market expansion by providing diversified products depending on the nature of inputs provided by supply chain of the organization. The model indicates the higher proportion of variability in the mean data supply chain in changing of products nature at 5% significant level. Two-tailed test at 95 percent confidence interval with difference between means represent t critical value t=2.306 and Z critical value=1.960 with p-value (two-tailed) at 5 percent significance level is 1.00. So, we can reach the decision that Good Supply Chain Make sure Products Diversification and RMG growth. The risk of rejecting null hypothesis is true 100%.

(A) Good supply chain will Ensure Products diversification of Bangladeshi RMG (X) Effective Supply chain has impact on recent growth of RMG in Bangladesh (Y).

Table 12. *Regression coefficient Ho3(A).*

Model	DF	R^2	Adjusted R^2	MSE	RMSE
1	3	0.999	0.998	1.702	1.305

Predictor(Constant)x and (Variable) Y

Table 13. *T-test and Z-test Ho3(A).*

DF	t critical value	Z critical Value	p-value (Two- tailed)
8	2.306	1.96	1

Test for two independent samples / Two-tailed test: 95% confidence interval on the difference between the Means:(-40.311, 40.311) for Z-test and (-47.428, 47.428) for t-test.

As P value is greater than alpha=0.05, we can not reject null hypothesis. the risk to reject null hypothesis is Ho2 while it is true is 100%. The Pearson's Correlation between the impacts of considering nature of products in supply chain and products diversification of RMG is r=.981. There is a very strong positive correlation between considering nature of products in the supply chain and products diversification through good supply chain. This means that if supply chain changes that will influence the rate of product diversification and growth of RMG and finally growth of the country strongly. Considering nature of products in Supply chain management strength will Make sure growth by providing diversified products to customers and Make sure market expansion. Regression coefficient represents about 92.3 percent of the variability in the growth of the country and market expansion through providing diversified products depending on the nature of inputs provided by supply chain of the organization. The model indicates the higher proportion of variability in the mean data supply chain in changing of products nature at 5% significant level. Two-tailed test at 95 percent confidence interval with difference between means represent t critical value t=2.306 and Z critical value=1.960 with p-value (two-tailed) at 5 percent significance level is 1.00. So, we can reach in the decision that considering products nature in Supply Chain make sure Products Diversification and country's growth. The risk of rejecting null hypothesis is true for 100%.

(B) Nature of Products is considered (then country will grow fast) (X) and Good supply chain will ensure Products diversification of Bangladeshi RMG (Y).

All $R^2$and Adjusted R^2in the regression coefficient represent more than 80 percent variability. So, appropriate forecast of Product demand (innovative and functional) will accelerate productivity, diversification and growth.

Table 14. *Regression Coefficient for Ho3(B).*

Model	DF	R^2	Adjusted R^2	MSE	RMSE
1	3	0.923	0.898	109.581	10.468

Predictor(Constant)x and (Variable) Y

Table 15. *T-test and Z-test for Ho3(B).*

DF	t criticalvalue	Z critical Value	p-value (Two- tailed)
8	2.306	1.96	1

Test for two independent samples / Two-tailed test:95% confidence interval on the difference between the Means:(-33.771,33.771) for Z-test and (-39.733,39.733) for T-test.

As P value is greater than alpha=0.05 for both T-test and Z-test, we can not reject null hypothesis. the risk to reject null hypothesis is Ho2 while it is true is 100%.

Jarque-Bera Normality Testdata:

(1)Possibility of expansion is zero when supply chain is unrelated with productsnature considering other Factor is normalwith The Nature of Products in Supply chain is crutial in managing cost of Product and profit representsJB = 0.63512, p-value = 0.7279 alternative hypothesis is greater.

(2) The Nature of Products in Supply chain is crucial in managing cost of Product and profit with Pssoibility of expansion is zero when supply chain is unrelated with products, nature considering other Factor is normalrepresents JB = 0.74368, p-value = 0.6895alternativehypothesis is greater.

Table 16. *Pearson's Correlation matrix.*

Variables	The Nature of Products in Supply chain is crucial in managing cost of Product and profit.	Possability of expansion is zero when supply chain is unrelated with products Nature Considering other factors normal.
The Nature of Products in Supply chain is crucial in managing cost of Product and profit.	1.000	0.898
Possibility of expansion is zero when supply chain is unrelated with products Nature Considering Other Factor is normal.	0.898	1.000

Table 17. *Analysis of variance (ANOVA): Computed against model Y=Mean(Y).*

Source	DF	Sum of squares	Mean squares	F
Model	1	501.947	501.947	12.543
Error	3	120.053	40.018	
Total	4	622.000		

(constant) The nature of Products in Supply chain is crucial in managing cost of Product and profit and (Variable) possibility of expansion is zero when supply chain is unrelated with products, Nature Considering Other Factor is normal.

The Pearson correlation matrix r=.898 between nature of products in managing cost and profit with possibility of expansion is zero when supply chain is unrelated with products nature. The number is close to 1.00. So, there is a strong relationship between the two variables in the globalmarket. 61 percent respondents' believe that, possibility of expansion is zero under managing supply chain without consideration of innovative and functional products in RMG sector.The analysis of the products nature on managing cost of Product and profit represents that 93 percent respondentsare on view that product nature has impact on profit and costminimization in the global market.

6. Conclusions

Manufacturing sector is the raw materials or intermediate products dependent sector of each economy. RMG industry is basically dependent on the supply of raw materials of production. When the supply of raw materials become disturbed, then the system of production become obsolete. RMG industry of Bangladesh is suffering from different shorts of problem among them supply of in time orders comes first. Because, our RMG industry is dependent on the supply of materials mainly come from outside Bangladesh. Though, Government of Bangladesh has taken initiatives to improve the sector and made it dependent on its own raw materials but the main materials of producing cotton are not available in Bangladesh. That is why; most of the Bangladeshi RMG exporters have to import raw materials from outside Bangladesh sometimes from Europe and USA. This causes the problem in maintaining strong supply chain management and responding to market demand in time. The mean value of lead time of export-oriented RMG products of different company exporting RMG products is very high due to lack of prompt supply chain, Bangladesh has to export basically functional products which was innovative for few days or weeks ago. The long lead time has made it impossible to offerinnovative products and generate revenue. Good Supply chain of countries other than Bangladesh enter market with innovative products. Bangladesh RMG has developed due to Supply of huge cheap labor but transformation of labor intensive technology to capital-intensive technology will decreasenecessary labor in RMG industry. So, Bangladesh has to look for and make sure good supply chain management to make sure proper supply of inputs to RMG industry. From the analysis of the data we can conclude that supply chain management is the prime factor accelerating growth of RMG. If we look at the sensitivity of customers, the time priority comes first. As most of the customers consider in time delivery first, then price and finally quality in case of RMG products. Different Export Lc of Prime Bank limited, TSD, Gulshan, Bangladesh shows that on an average 3 to 4 times amendment is needed to deliver product to customer and changing delivery time is

very unexpected for specially innovative products. So, management of the organization should consider supply chain first and take necessary actions to respond to customers. Fisher (1997)suggests that products with different nature should have different supply chain. With there high contribution and profit margins, changing demand innovative products require different supply chain than do functional products.The mismatch between supply chain strategy and the nature of products results in failure in business of the organization. Fisher and Rahman (1994) focuses on correct forecasting of products to cut lead time and storage costs. They also suggest efficiency supply chain process for functional products and responsive supply chain for innovative products. So, Product's nature is the key determinantin managing supply chain and profitability of the organization in the Global Competitive market place.

Appendix

A1: Supply Chain Management is related to RGM Growth

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	76	76	76
Agree	12	12	88
Neutral	10	10	98
Disagree	0	0	98
Strongly Disagree	2	2	100

A2: Supply Chain Management Can Reduce Lead Time

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	80	80	80
Agree	12	12	92
Neutral	5	5	97
Disagree	2	2	99
Strongly Disagree	1	1	100

A3: Products Nature has impact On supply chain

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	65	65	65
Agree	20	20	85
Neutral	5	5	90
Disagree	6	6	96
Strongly Disagree	4	4	100

A4: Effective Supply chain has impact on recent growth of RMG in Bangladesh

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	77	77	77
Agree	13	13	90
Neutral	8	8	98
Disagree	2	2	100
Strongly Disagree	0	0	100

A5: If Nature of products is considered, then Company will grow fast.

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	48	54.54	54.54
Agree	17	19.32	73.86
Neutral	2	2.27	76.13
Disagree	9	10.23	86.36
Strongly Disagree	12	13.64	100

A6: Good supply chain will Make sure Products diversification of Bangladeshi RMG

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	78	78	78
Agree	13	13	91
Neutral	6	6	97
Disagree	2	2	99
Strongly Disagree	1	1	100

A7: Interrelationship is the main way to Make sure Appropriate supply Chain

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	56	56	56
Agree	17	17	73
Neutral	4	4	77
Disagree	9	9	86
Strongly Disagree	14	14	100

A8: Good Supply Chain Increase Productivity

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	63	63	63
Agree	13	13	76
Neutral	11	11	87
Disagree	9	9	96
Strongly Disagree	4	4	100

A9: Psooibility of expansion is zero when supply chain is unrelated with products, nature considering other Factor is normal.

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	40	40	40
Agree	21	21	61
Neutral	10	10	71
Disagree	9	9	80
Strongly Disagree	20	20	100

A10:The Nature of Products in Supply chain is crutial in managing cost of Product and profit.

Parameters	Frequency	Percent	Cumulative percentage
Strongly Agree	61	61	61
Agree	32	32	93
Neutral	5	5	98
Disagree	2	2	100
Strongly Disagree	0	0	100

A11: Efficiency Supply Chain Process and Responsive Supply Chain Process

Efficiency	Supply Chain Process	Responsive Supply Chain Process
Purpose	Supply Predictable Demand products at the lowest possible cost.	Response quickly to unpredictable demand to Reduce stock out.
Focus	Maintain High Average utilization rate	Use excess buffer capacity.
Inventory	Generate high turnover and reduce Inventory in the supply chain	Deploy Significant buffer stocks of parts and finished goods.
Lead Time	Maintain Lead time at lowest possible cost level.	Reduce lead time as much as Possible.
Approach	Primarily on cost and quality.	Speed, Flexibility and then cost.
Design	Maximize performance and	Same Quality products are
Strategy	Minimize cost Produced with no differentiation	

Source: Fisher and Rahman (1994)

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