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Sustainable Supply Chain Management Practices and Challenges of Agri-business in Bangladesh

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ABSTRACT: *Supply Chain Management (SCM) concerns management of the total flow of a distribution channel from supplier to end consumer. It is a set of activities that promotes an effective management of supplier partnerships, meeting customer demands, movement of goods and information sharing throughout the supply network of an industry. The fundamental difference between food supply chains and other chains is the continuous and significant changes in the quality of agro-food products throughout the supply chain network. SCM activities (like service, delivery, and information) pose major difficulties in the agro-food sector. Furthermore, competitiveness in supply chains has been a key issue for organizations and mapping the competitiveness of an organization helps to form a sound basis for sustainable business development. Agro-food industries have to deal with government rules, customer and stakeholders' interests, seasonality, supply spikes, long supply lead time and perishability. Strategically, rather than competing within low-cost market segments, many agro-food producers are following a differentiation strategy that targets niche market segments like organic foods. Studies have identified that stakeholders such as consumers, retailers, suppliers and regulators are the influential force driving firms to balance environmental aspects of their business with financial performance. The agri-business and sustainable challenges are observed using graphical representation through survey.*

KEY WORD: Supply chain management, agro-food sector, information, organic foods, sustainable.

INTRODUCTION

Bangladesh is a developing country with a large population and a small land area. This large population depends on the domestic agri-business sector for the needs of everyday life. Agri-business plays an indispensable role in the world's economy. More than 10 percent of GDP comes from agri-business (Bangladesh Bureau of Statistics, 2017-2018). Agri-business products have three specific characteristics that make sustainability more complicated than in most sectors: seasonality, supply spikes, and perishability. Planning is required for seasonal products as consumption takes place throughout the year. Hence, most agricultural products have long supply lead times. Processing agricultural products, including packing, storing and transporting, requires handling that minimizes perishability. If it is not properly managed, substantial product value can be lost.

This paper assesses considerations of sustainability in the context of agri-business. According to Corbett and Kleindorfer(2003), sustainability in agri-business is the critical next step in agri-business management.

Literature Review

Cunningham (2003) scrutinized 123 peer-reviewed journal articles published during 1987-2000 in seven commercial databases on the theme of agri-business supply management and explored the possibility of conducting additional studies on all agri-business supply chain processes. Vasileiou and Morris (2006) conducted descriptive research based on primary data collected through exploratory interviews of 240 potato cultivators, 17 potato

merchants, and 4 potato retailers. They analyzed the data using nonparametric statistical tools. Results show that all respondents in the supply chain were immensely concerned about sustaining their respective businesses and gaining comparative advantage. Market, social and environmental factors have great bearing on these ventures. According to Drumwrigth (1994), firms should not focus solely on maximizing profit but should also embrace their social responsibilities. Many researchers have defined social SCM as SCM focusing on maintaining environmental, economic, and social stability for long-term sustainable growth (Ahi and Searcy 2013; Beske et al. 2014;Carter and Rogers 2008; Dubey et al. 2016; Silvestre2015). Seuring and Muller (2008) define SCM as the management of material, information, and capital flows, as well as the cooperation among firms along the supply chain, while adopting goals from all three dimensions of sustainable development. The World Commission on Environment and Development (1987) considers sustainability as economic practices that meet needs of the present without compromising the ability of future generations to meet their needs.

To distinguish green SCM, Ahi and Searcy (2013) identify 22 definitions for green SCM and 12 for social SCM. They conclude that the latter is the extension of the former. Dubey et al. (2016) make an in-depth analysis of the definitions of social SCM based on a literature review and divide it into two broad categories: social SCM as a management philosophy and social SCM as a set of management processes. Srivastava (2007) reckons that an organization must manage not only short-term financial results but also the risk factors resulting from

its products, environmental waste, and safety of workers and public. Ahi and Searcy (2013) consider that green and lean practices are two important pillars of sustainable business development. They expand business sustainability characteristics into an integrated perspective, including not only the environmental, social and economic focus but also resilience in terms of stakeholders and volunteers.

Current Challenges facing Agri-business in Bangladesh

The scope of agri-business spans many sub-sectors within agriculture and agro-based processing industries and services. Agri-business has developed over the years, but it still lags behind its potential (Dev and Zaman, 2007). Bangladesh's large population is dependent on the success of this sector. During a conference organized by the Bangladesh Agricultural and Research Council (BARC) in 2008, The Daily Star (Shaikh 2008) identified some of the challenges:

- Increasing population to feed.
- Loss of agricultural land (annual loss of 10000 hectares of productive agriculture land due to roads, housing, and other development projects).
- Erosion of river banks.
- Lack of technology creating a "yield gap" (the difference between actual and potential production).

During the last two decades, the focus for optimizing operations has moved from a specific facility or organization to the entire supply chain. By optimizing along the entire sequence

of that chain, firms can realize the greatest value at the lowest possible cost (Handfield and Nichols 1999). According to Prokesch and Steven (2010), most organizations focus on the nature of their relationships, and in supply chains. 90% of these relationships are still not stable, because there is very little trust and little ability of firms to innovate together. In case of a big manufacturer or retailer, it can exercise upstream pressure, so the cost to the large firm can be reduced. They also mentioned key challenge areas:

- Understand the larger system
- Learn to work with the people with whom you did not work before, and
- Define how you perceive sustainability.

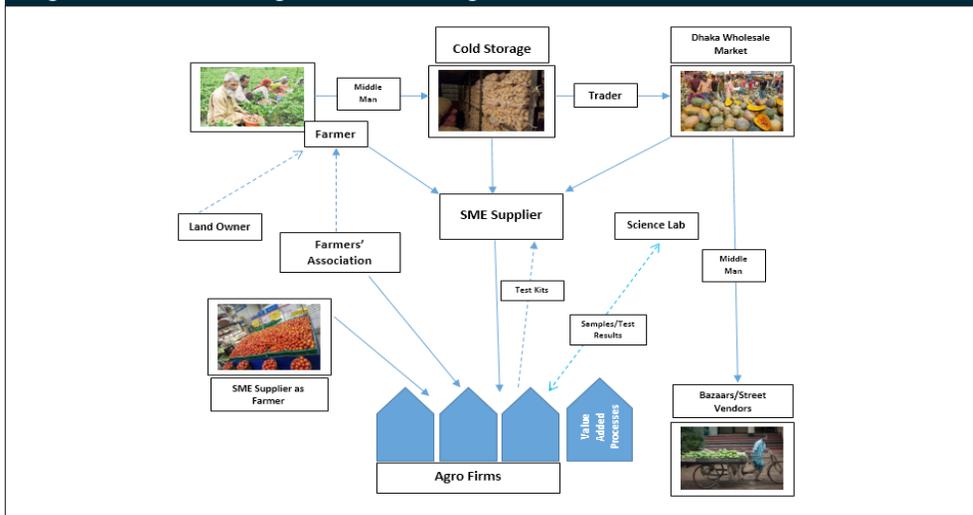
Figure 1 shows that

- Agro-business firms source directly from farmers' associations and small medium enterprises (SME).
- SME suppliers source directly from middlemen in wholesale market, and from individual farmers.

Understanding importance of sustainability in supply Chain

Sustainability has become a key priority in the design and operation of supply chains in the 21st century. A focus on sustainability allows a supply chain to better serve more environmentally conscious expectations while often improving supply chain performance. The focus of sustainability has increased as large countries like China, India and Indonesia have developed. Economic and technological factors

Figure 1: Framework of Agri-business in Bangladesh



are improving global living standards in a way that no one had imagined 40 years ago, and it is clear that, if supply chains do not become more sustainable, then it will be difficult to manage the world's resources.

- To frame the challenges in adopting an optimum sustainable supply chain in the agricultural sector of Bangladesh.

Objective of the study

This study endeavored to explore the construct of SCM practices and sustainability in the agri-business sector in Bangladesh. The objective of the study are as follows:

- To comprehend and articulate the contemporary practices of the supply chain in the agri-business sector of Bangladesh.
- To investigate the relationship between the sustainable supply chain and organizational performance.
- To exhibit the relationship between a sustainable supply chain and social, economic and environmental sustainability.

Methodology

This study has used both primary and secondary data. Ten leading agri-business firms were selected for the study. The primary data have been collected from discussions with 150 interviewees in different agri-business firms. Interviewees are classified by job title and their job functions (corporate executive, purchasing, manufacturing/production, distribution/logistic, SCM, transportation of Bangladesh agri-business products). The study also utilizes secondary industry-related data collected from the website, reputed journals, relevant books, magazines and other documents. The collected data were analyzed statistically with SPSSV19 software. The associated outcomes are exhibited through graphical representation as well as the numerical outputs.

Data Interpretation

Do supply chain practices have a positive relation with sustainability?

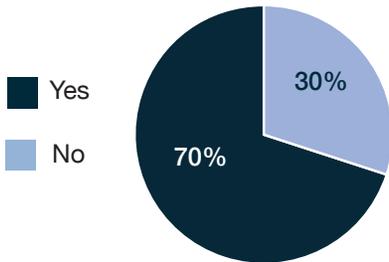


Figure 2

70% of respondents believe that there is a positive relationship between supply chain practices and sustainability

Are sustainable supply chain management practices positively related with social sustainability?

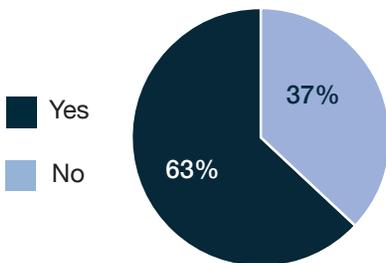


Figure 3

More than 60% of respondents identified sustainable supply practices as important for social and economic sustainability.

Are sustainable supply chain management practices related to economic sustainability?

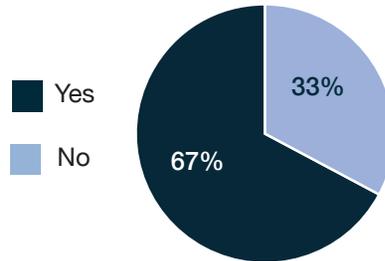


Figure 4

Are sustainable supply chain management practices positively related with environmental sustainability?

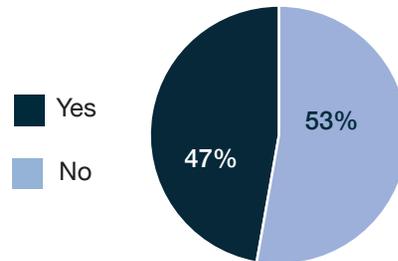


Figure 5

Opinions on whether sustainable supply chain management improves environmental sustainability are fairly evenly divided.

Can sustainable supply chain management overcome the challenge of supply chain integrity, flexibility and responsiveness?

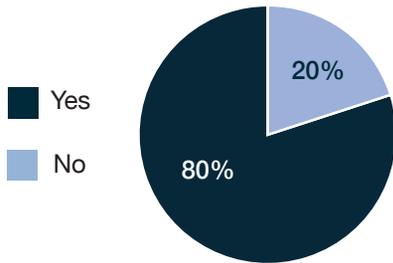


Figure 6

80% of respondents agreed with the statement.

How confident are you in understanding the sustainability performance of your suppliers?

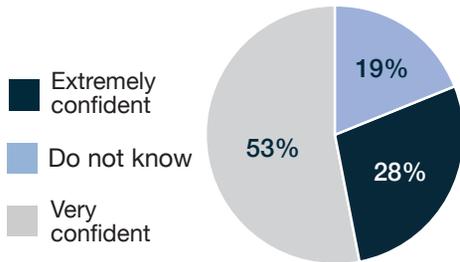


Figure 7

Most firms understand their suppliers' performance.

Which sustainability performance issues most concern your company?

- Lack of interest among stakeholders (employees and clients)
- Regulatory Compliance
- No way to measure impact
- Current economic relatives, the need to run lean
- Managing the life cycle and cumulative environmental impacts

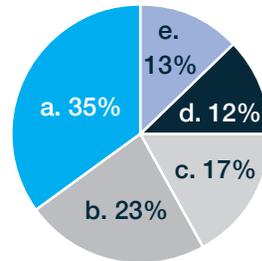


Figure 8

The most common response identified a lack of interest from stakeholders; the second response focused on regulatory compliance.

What hinders sustainability innovation in your Supply Chain?

- a. Uncertain
- b. Return on investment (ROI)
- c. Insufficient Supplier Understanding
- d. Limited Resources

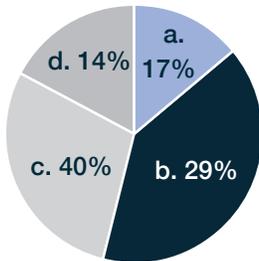


Figure 9

It seems that suppliers have less understanding about innovative ideas about sustainability.

Discussion and suggestions

In this era of globalization, the increase in reckless production and consumption results in environmental degradation, economic crisis and social disorder. Sustainability has become a serious concern for many business sectors. So, as a major contributor to economic development of Bangladesh, the agricultural sector cannot avoid the call for sustainable development. As a response to this call, this research has attempted to realize the prospect and challenges in infusing the concepts of sustainability within the agricultural supply chain of Bangladesh. A set of questionnaires

was prepared and a thorough survey was conducted on the subject. The results led to some interesting observations. For instance, in parallel to raising concern about sustainability around the world, people involved with agribusiness in Bangladesh have become aware about the concept and prospects of Sustainable Development. As evidence, more than 70% of the participants believe that their current supply chain practices have a positive relation with sustainability. Moreover, 80% of the respondents also agreed that sustainable supply chain management practices could solve problems of integrity, flexibility and responsiveness.

Interestingly, even though the majority of respondents believe that sustainable supply chain management practices have a positive relation with social and economic sustainability, more than half of participants believe that sustainable practices have no direct interaction with environmental sustainability. This finding exhibits the gap in the proper conceptual realization of sustainability among the participants. In other words, this calls for knowledge promotional activities. The majority of respondents believe that the lack of interest of employees and clients, as well as the gap in knowledge among suppliers, may retard adoption of sustainable SCM. As a consequence, in the future, an attempt should be made to investigate the reasons behind this knowledge gap.

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APPENDIX

Research questionnaire

Supply Chain practices has a positive relation with sustainability.

- Yes
- No

Sustainable Supply Chain Management practices is positively related with social sustainability.

- Yes
- No

Sustainable Supply Chain Management practices is related to Economic Sustainability.

- Yes
- No

Sustainable Supply Chain Management practices positively related with Environmental Sustainability.

- Yes
- No

Sustainable Supply Chain Management can overcome the challenge of supply chain integrity, flexibility and responsiveness.

- Yes
- No

How confident are that you understand the sustainability performance of your Suppliers.

- Extremely Confident
- Very Confidently
- Do not know

Which sustainability performance issues most concern your company?

- Lack of interest stakeholders (Employees and Clients)
- Regulatory Compliance
- No way to measure impact
- Current economic relatives, the need to run lean
- Managing the life cycle and cumulative environmental impacts

What hinders sustainability innovation in your Supply Chain?

- Uncertain
- ROI
- Insufficient Supplier Understanding
- Limited Resources