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# The Roles of Supply-Chain Management on Competitive Advantage: an Empirical Study in the Bangladeshi Apparel Sector

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## ABSTRACT

*The purpose of this study was to examine the impacts of supply chain management (SCM) practices on competitive advantages among Bangladeshi apparel manufacturers. Using a quantitative approach, data were collected from apparel manufacturers in Bangladesh via an online survey. The SCM practices were conceptualized as a multi-dimensional construct to include strategic supplier partnership, customer relationship, information sharing, and process integration. The competitive advantages (CA) in 4 performance areas, cost, quality, delivery, and flexibility, were assessed. A total of 117 responses were analyzed. Findings included that (a) strategic supplier partnership and process integration practices were moderately related to quality CA, (b) information sharing was significantly related to delivery CA, and (c) information sharing was also significantly related to flexibility CA. The results indicate that certain dimensions of SCM practices have positive impacts on certain competitive advantages. The results suggest that implementing targeted SCM practices could achieve differentiation in a certain performance area. Given that most Bangladeshi apparel manufacturers have focused on the low-price strategy, the results provide them an opportunity to advance their competitiveness in the global market. This study is the first quantitative study that addresses SCM practice in the apparel industry in lower-middle income country. The results not only confirmed the multi-dimensionality of the SCM practices but also found their differential impacts across the areas of CA.*

*Keywords: SCM practices, competitive advantage, apparel industry, Bangladesh, RMG industry, exporters*

## Introduction

Bangladesh has recently been recategorized as a developing country due to its remarkable economic growth during the last couple of decades. The apparel or ready-made garment (RMG) industry has been the main contributor to development. Its cheaper labor costs compared to other apparel

manufacturing countries was one of the main reasons. Yet, other conditions such as duty exemption, reduced tariffs, and other preferential access provided by the World Trade Organization (WTO) have been the leading accelerators of its development (BGMEA, 2019). The country is now the second-largest exporter of apparel in the world following China, accounting for 7% world apparel market share (WTO, 2019). In the 2018-19 fiscal year, its apparel export marked US $34.13 billion, which accounts for 84.21% of its total export earnings (BGMEA, 2019). The industry has made a significant contribution to Bangladesh's social and economic development by providing a primary income source to over four million workers, mostly women.

Bangladeshi apparel manufacturers, however, are being challenged in terms of quality, customer service, and lead time by numerous global competitors today. They have also started seeing difficulties in sourcing raw materials and problems with long lead time and increasing manufacturing costs (Asgari & Hoque, 2013). While manufacturers from numerous developing countries have competed in the saturated apparel sector worldwide along with the progression of globalization, it has been emphasized that success and failure depend upon efficient supply chain management (SCM) practices that have been lacking in the sector (Berdine, Parrish, Cassill, Oxenham, & Jones, 2008; Şen, 2008). Therefore, implementing SCM becomes imperative for Bangladeshi apparel manufacturers to achieve a competitive position over their competitors and continue to grow (Asgari & Hoque, 2013).

While SCM is called for to sustain the sector's growth, most of the SCM studies have been limited to the technology and other capital-intensive sectors, especially in developed countries and upper-middle-income countries. Only a few researchers have studied the SCM concept in the Bangladeshi apparel manufacturing industry (e.g., Ahsan & Azeem, 2010; Ali & Habib, 2012; Asgari & Hoque, 2013; Nurruzaman et al., 2010). These studies, however, only qualitatively addressed operational factors. The literature clearly lacks generalizable findings applicable to the Bangladeshi apparel sector, including both supplier and customer relations and related factors. The purpose of this study was to examine the extent to which Bangladeshi apparel manufacturers utilize SCM practices and their impacts on competitive advantages. Applying the concept of chain management including both supplier and customer related factors, in this study, SCM practices are conceptualized as the firms' ability to create strategic supplier partnerships, establish good relationships with customers, share information, and integrate all processes.

This study carries both theoretical and practical contributions. In the theoretical terms, this study adds substantial knowledge to the existing SCM literature by providing an empirical case of the labor-intensive, apparel sector in a lower-middle-income country. Practically, the implications and recommendations from this study can help Bangladeshi apparel manufacturers better understand the SCM concept and its roles in achieving competitive advantages. Suggestions for the international and local policymakers and industry leaders for further advancing the industry are also discussed.

## Literature Review and Hypotheses Development

### Supply Chain in the Bangladeshi Apparel Sector

In the past, Bangladeshi apparel manufacturers started with simple cutting, making, and trimming processes (CMT), but some have progressed to full packaging manufacturing services or original equipment manufacturing (OEM) systems (M. Hasan, 2017). In the full packaging manufacturing system, all value-added activities from raw materials sourcing to delivery, up to a loading point, is performed by the manufacturers, beyond assembly operations (Gereffi, 1999). Therefore, importing/transporting raw materials and

coordinating the upstream and downstream supply chain activities became new challenges for them.

Bangladesh is known as one of the cheapest apparel exporters in the world (McKinsey & Company, 2013; Meenakshi, 2014). Among the key apparel manufacturing countries, the lowest wage is found in Bangladesh. The recent comparative wage of the apparel workers in the leading apparel exporting countries indicated that Bangladeshi workers earned 0.53 USD per hour while Chinese workers earned between 1.76 to 3.52 USD, Cambodian workers earned 0.75 USD, and Vietnamese workers earned 0.69 USD respectively (WageIndicator, 2019). Such low-cost labor has given the sector an advantage even after the Multi-Fiber Arrangement (MFA) era.

Typically, the apparel supply chain can be primarily divided into two parts: The downstream or demand part and the upstream or supply part. Customers, large, powerful multinational retailers, often referred to 'retailers' in today's standards, with multiple and often internationally located outlets, are in the demand part. The supply part consists of manufacturing companies, including raw material suppliers and textiles and apparel manufacturers, most of whom are located in the developing and least developed countries (Ahsan & Azeem, 2010). Thus, apparel manufacturers have both suppliers and customers, and maintaining good partnerships with both parties through sharing appropriate information promptly and working together could be the source of efficient operations.

**Competitive Advantage (CA)**

Competitive advantage (CA) is defined as the ability of an organization to build a stronger position over its rivals (Koh, Demirbag, Bayraktar, Tatoglu, & Zaim, 2007). According to Porter (1985), it is the value that a firm creates for its customers through cost leadership and/or meaningful differentiation. It could be achieved by meeting the end customer's demand through supplying what is needed in the form it is needed, when it is needed, at a competitive cost (Cooper, Lambert, & Pagh, 1997; Mentzer et al., 2001). Thus, differentiation in quality, lead time, or delivery could be the sources of competitive advantage (Li, Ragu-Nathan, Ragu-Nathan, & Rao, 2006). Competitive advantage has been suggested as a way for developing countries to 'take off' during the development process (Porter, 1985).

The dominant strategy of the Bangladeshi apparel industry has been the cost-leadership strategy (Jahan, Rahman, & Islam, 2018). Most Bangladeshi companies focus on hiring the cheapest labor to gain the cost-advantage to sell more products at a lower price (Jahan et al., 2018). This practice coincides with Porter's generic strategy, which utilizes abundant, cheap labor available (Islam et al., 2016). However, the emergence of global competitors such as Vietnam and Cambodia, along with the already intense competition, competitive advantage became the main challenge for Bangladeshi manufacturers to further develop. According to Su, Dyer, and Gargeya (2009), when selecting international suppliers, buyers consider quality, cost, and reliability of delivery, and flexibility the most indicating important areas of competitive advantage. These key selection criteria are also in line with the variables used in the SCM or supply chain performance studies. For example, Lee et al. (2007) used in- and out-bound costs, warehousing costs, inventory holding cost, order fulfillment rate, inventory turns, and the number of product warranty claims to measure the supply chain performance. Essentially, the main objective of SCM is to make the company distinguished itself from its rivals by competitive advantages in different performance areas in cost, delivery time or lead time, product quality, and flexibility (Koh et al., 2007).

**Supply Chain Management (SCM) and Its Dimensions**

The term supply chain management (SCM) refers to managing the flows of merchandise, data, and assets or resources

over the whole supply chain network, from suppliers to final assemblers, to distributors, and ultimately to the customers (Mentzer et al., 2001). Under the new paradigm, including the traditional activities—enhancing productivity, quality control, and product design— SCM concentrates on improving the collaboration and cooperation among all members in the supply chain with a goal of satisfying what market or customer wants (Choi, 2012).

Studies of SCM are found in various fields, including purchasing and supply, logistics and transportation, marketing, and operations management. Although limited, such diversified SCM foci are also found in the textiles and apparel sectors, such as sustainable and green supply chain management (Jakhar, 2015; Kuo, Hsu, Huang, & Gong, 2014; Macchion et al., 2018; Wu et al., 2012), operation, production, and planning (Felfel, Yahia, Ayadi, & Masmoudi, 2018; Iqbal, Huq, & Bhutta, 2018; Safra, Jebali, Jemai, Bouchriha, & Ghaffari, 2019; Toni & Meneghetti, 2000), information systems, strategic relationship and sourcing (A. Ali & Haseeb, 2019; Divita & Cassill, 2002; Gary Teng & Jaramillo, 2005; Su et al., 2009).

During the past two decades, various SCM definitions have been proposed and measured by various studies (Burgess, Singh, & Koroglu, 2006; Stock & Boyer, 2009). While all the definitions generally focus on the flow of merchandise, the concept has been diversified depending on the perspectives and/or the ways to conceptualize or operationalize SCM (Burgess et al., 2006). Regardless of the perspectives and conceptualization, the majority of the studies address multiple dimensions of SCM practices, which include a set of activities and processes of upstream, downstream, and a company's internal operation, and their contributions to a firm's performance measures including competitive advantages.

Li et al. (2006) empirically developed a framework to identify the relationships among SCM practices, competitive advantage, and organizational performance with different manufacturing companies in the US. They identified five dimensions of SCM practices (i.e., strategic supplier partnership, customer relationship, level of information sharing, information sharing quality, and postponement) and found a direct impact of these dimensions on both competitive advantage and organizational performance. Similarly, Tan et al. (2002) carried out a survey of the top-managements in different industries to investigate the pervasive SCM and supplier assessment practices. They categorized SCM practices into six variables addressing various aspects of supply and materials management issues (i.e., supply chain integration, information sharing, supply chain characteristics, customer service management, geographical proximity, and just-in-time capability). They also categorized supplier evaluation practices into three constructs addressing delivery, capacity and, information issues (e.g., delivery assessment, capacity assessment, and information assessment). They found that just-in-time (JIT) and supply chain characteristics had a positive relationship with overall product quality and, therefore, suggested that companies should focus on JIT and supply chain characteristics to improve overall product quality.

Miguel and Brito (2011) empirically tested the influence of SCM on operational performance among Brazilian companies. They found a significant positive impact of SCM (i.e., information sharing, long-term relationship, cooperation, and process integration) on traditional measures of operational performance (i.e., cost, flexibility, quality, and time). Tarafdar and Qrunfleh (2017) approached SCM as a mediator of supply chain practices on the relationship between agile supply chain strategy and supply chain performance in different manufacturing firms in the US. They conceptualized the supply chain practices to include strategic supplier partnerships, customer relationship, postponement, and lean practices, while Al-Tit (2017) included only two of the

dimensions, strategic supplier partnership and customer relationship.

Anbanandam et al. (2011) investigated the extent of SCM collaboration (i.e., top management commitment, information sharing, trust among supply chain partners, long-term relationships, and risk and reward sharing) between apparel retailers and manufacturers in the apparel retail industry in India. Their findings confirmed that the dimensions of SCM were positively related to operational performance. Futher, Wu et al. (2012) investigated the relationships between the drivers of green supply chain management (GSCM) (i.e., organizational support, social capital, and government involvement) and GSCM practices (i.e., green purchasing, cooperation with customers, eco-design, and investment recovery). The study results showed that all of the GSCM practices, except investment recovery, positively affected by the drivers of GSCM.

**Research Framework and Hypotheses**

The literature indicates that SCM practices include the following key dimensions: a) strategic supplier partnership (Al-Tit, 2017; Li et al., 2006; Tarafdar & Qrunfleh, 2017), b) information sharing (Li et al., 2006; Miguel & Brito, 2011; Tan et al., 2002; Tarafdar & Qrunfleh, 2017), c) customer relationship (Al-Tit, 2017; Li et al., 2006; Tarafdar & Qrunfleh, 2017; Wu et al., 2012), and d) process integration (Miguel & Brito, 2011; Tan et al., 2002). The following discusses the dimensions of the SCM practices and their roles to draw hypotheses related to the impacts of SCM dimensions on the competitive advantage of Bangladeshi apparel manufacturers.

**Relationships between strategic supplier partnership (SSP) and CA.** Strategic supplier partnership (SSP) is defined as the long-term relationship between the company and its suppliers (Li et al., 2006). It is intended to use the strategic and operational abilities or capacities of participating organizations, which enables them to accomplish significant ongoing benefits (Monczka, Petersen, Handfield, & Ragatz, 1998; Noble, 1997). Strategic supplier partnership deals with strategic linkages with suppliers, including new product design stage, production planning, inventory management, a rapid response order processing with suppliers, a supplier network that assures reliable delivery, and exchanging information with suppliers (Lee et al., 2007). It can help organizations work more effectively with a few important suppliers who are willing to share such obligations/responsibilities for the success of the products (Li et al., 2006). Tan et al. (2002) found that such partnerships can provide the organizations more cost-effective design choices and select the best raw materials and machinery. It was found that supplier participation in product development enabled companies to utilize their suppliers' abilities and technology or innovation to deliver competitive products (Handfield, Ragatz, Petersen, & Monczka, 1999).

Divita and Cassill (2002) suggested that strategic partnerships would play a key role in achieving the competitive advantage of the US domestic textile complex as well. They found that exchanging private company information, sharing financial risk, and receiving exclusive access to selected goods and services enabled the companies to reduce time to market. When Bangladeshi apparel manufacturers often need to source fabrics and other raw materials from foreign or domestic suppliers, such strategic supplier partnerships (i.e., combining the resources, capabilities, and core competencies) can be critical for them to achieve competitive advantage in cost, deliver time, quality, and flexibility. Thus, the following hypothesis was proposed.

*H1*: Strategic supplier partnerships (SSP) are positively related to the competitive advantage of the Bangladeshi apparel manufacturers.

**Relationships between customer/buyer relationship (CR) and CA.** Relationship management in SCM not only focuses on inbound customers but also on outbound customer relationships (Lee et al., 2007). The customer relationship

includes such activities as sharing product information with customers, interacting with them to manage demand and satisfy their wants and needs, accepting customer orders, having an order placing system, sharing order status with customers during order scheduling, and delivering the product (Lee et al., 2007). Such close customer relationships would allow an organization to differentiate itself from competitors, sustain customer loyalty, and dramatically extend the value it provides to its customers (Lee et al., 2007; Noble, 1997). Although Bangladeshi apparel manufacturers lack relationship-base resources (Asgari & Hoque, 2013), cooperative and harmonious relationships with multinational big-name apparel retailers/brands or their representatives, who are the customers of Bangladeshi apparel manufacturers, help them acquire unique and valuable resources to compete over their competitors. Therefore, it can be hypothesized that:

*H2*: Customer relationships (CR) are positively related to the competitive advantage of the Bangladeshi apparel manufacturers.

**Relationships between information sharing (IS) and CA**. Information sharing has been found as one of the main predictors in many SCM studies (Li et al., 2006; Miguel & Brito, 2011; Tan et al., 2002; Tarafdar & Qrunfleh, 2017). Many researchers have suggested that the key to forming a smooth supply chain is making exact and up-to-date marketing data available at every point within the supply chain (Li et al., 2006; Miguel & Brito, 2011; Tarafdar & Qrunfleh, 2017). Further, facilitating information sharing with customers could significantly improve operational and financial performance (Li et al., 2006). Thus, making the data available and sharing them with suppliers and customers within the supply chain can become a source of resource and ultimately leads to competitive advantage (Lotfi, Mukhtar, Sahran, & Zadeh, 2013). Because the apparel sector is one of the most sensitive sectors to up to date information for effective production and inventory management, sharing financial, production, quality related information with their suppliers and customers would create a competitive advantage for Bangladeshi apparel manufacturers. Thus, it was hypothesized:

*H3*: Information sharing (IS) is positively related to the competitive advantage of Bangladeshi apparel manufacturers.

**Relationships between process integration (PI) and CA.** Process integration (PI) occurs when organizations work together to have a continuous and efficient flow of materials and resources (Chen & Paulraj, 2004; Cooper et al., 1997; Mentzer et al., 2001). To create a responsive supply chain, a high level of process integration both internally and externally with upstream and downstream partners is necessary (Christopher, Lowson, & Peck, 2004). Such process integration makes seamless connections with supply chain partners, which can remove or reduce deferrals caused by hand-offs or buffers between the various stages in the chain and encourage paperless transactions (Christopher et al., 2004). Process integration, along with information sharing, allows processes improvement, inventories reduction, and shortened lead time (Cooper et al., 1997; Mentzer et al., 2001). Process integration between the members of the supply chain also can result in cost and time reduction, quality, and a greater level of flexibility as it allows each organization to focus on its core competencies (Miguel & Brito, 2011). However, some researchers (e.g., Bruce et al., 2004) argue that process integration with the company and external partners is not commonly practiced in the apparel or fashion industry because of their highly diverse and heterogeneous natures involving numerous processes and partners. Instead, the lean or agile approaches utilizing effective sequences in the manufacturing process have been suggested to reduce lead time, improve customer order demand management, and reduce wasteful activities (Bruce et al., 2004; Iqbal et al., 2018). Although there is a contradicting

argument in the field, following the SCM literature and empirical findings, it was hypothesized as the following.

*H4*: Process integration (PI) is positively related to the competitive advantage of Bangladeshi apparel manufacturers.

The hypotheses are summarized in Figure 1. As previously discussed, the main areas of competitive advantage performance include cost, delivery time or lead time, product quality, and flexibility.

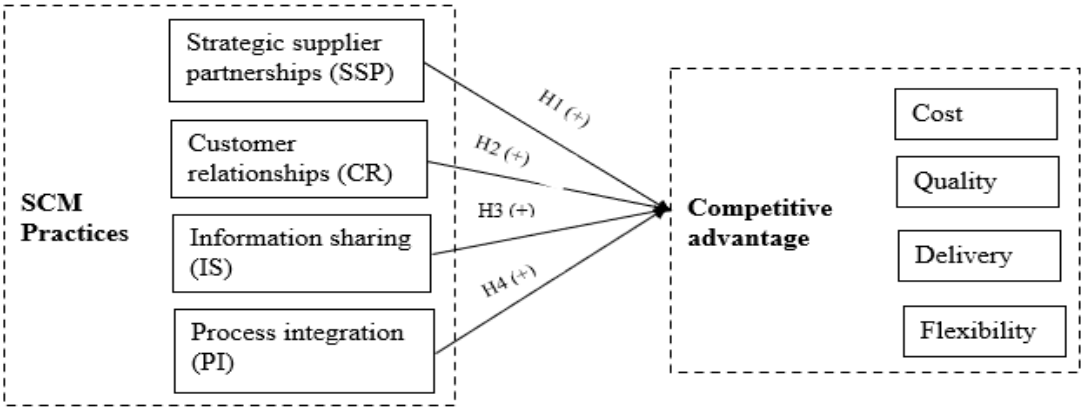


**Figure 1. Model of SCM practices in the apparel industry.**

## Methodology

### Research Design

The purpose of this study was to examine the status of SCM practices and their impacts on competitive advantages in the Bangladeshi apparel sector. A quantitative approach was used to obtain generalizable findings. An electronic/online survey was the most logical, cost-effective method for collecting data because of the geographical distance of the sample from the researcher and flexibility for the respondents. It also allows a higher level of accuracy, ability to download data directly into statistical software, reduced mailing cost, a possibility of including an unlimited number of participants anytime, anywhere. Many studies in the SCM literature used a survey method due to these reasons (e.g., Koh et al., 2007; Lee et al., 2007; Miguel & Brito, 2011). An application for Institutional Review Board (IRB) exemption was approved (IRB# 18-E-376).

**Sample.** The target population was apparel manufacturing companies operating in Bangladesh. A company was considered as a unit of analysis. The response rates to the surveys by the business respondents have been relatively low (e.g., Li et al., 2006; Miguel & Brito, 2011). Hence, the following method was utilized. First, a random sample of 1,000 companies was taken from the member list of the Bangladesh Garment Manufacturers and Exporters Association (BGMEA). BGMEA is one of the largest trade associations in Bangladesh, representing the apparel sector. Second, the companies were contacted via emails and phone calls to identify potential respondents who were appropriate for the survey from January 2019 to March 2019. During this process, 227 companies were unable to be reached, and the same number of new companies were randomly drawn from the BGMEA list, followed by the same contact procedure. A total of 129 completed surveys were obtained (13% response rate), 12 of which were excluded due to a significant number of missing values and invalid responses such as the same ratings on all items. The response rate was comparable to previous studies where business respondents were surveyed (e.g., Li et al., 2006; Miguel & Brito, 2011). A total

of 117 responses were deemed usable and included in the data analysis.

**Data collection procedure.** The first invitation email with a link to the online survey was sent to the potential respondents. Respondents could choose their preferred language, either English or Bangla. A reminder email was sent to the respondents after one week of the first invitation, followed by another email invitation with a link to the survey after two weeks. A final attempt was made via phone calls. A chance to win one of twenty-five 20 USD worth gift cards was offered to increase the response rate. Participants were informed that one out of every five responses would be randomly selected for the gift cards. At the end of the survey, participants were redirected to another online data form, separate from the survey, to enter their information for the raffle. Although this form asked the participants' names and their information, the entries were stored separately from the survey to keep the survey responses anonymous.

**Instrument.** Qualtrics, an online survey platform, was used. The questionnaire was comprised of items to measure four dimensions of SCM practices and four areas of CA. To increase the validity of the survey questionnaire, the measurement items were reviewed by several researchers and re-evaluated through structured interviews with three industry practitioners. As a result, redundant and ambiguous items were eliminated or revised. A total of 37 items were included in the instrument as a result. For SCM practice, there were 21 items, and participants were asked to indicate the extent to which each item was practiced in their company using a 5-point Likert scale ranging from *never (1)* to *always (5).* For competitive advantage, there were 16 items, and participants were instructed to indicate the degree to which they agree with each statement using a 5-point Likert scale ranging from *strongly disagree (1)* to *strongly agree (5).*

The English version of the questionnaire was first constructed and then translated to Bangla by a fluent bilingual translator and then back translated into English by another bilingual translator. Based on the discrepancies between two translators, revisions were made in wording to clarify the semantics in the two versions. The process was repeated until the back translation matched the original. To verify that the two forms of instrument or language did not act as a confounding factor, independent sample t-tests were performed on several key variables between the English and Bangla versions. There were no significant differences between the two groups' responses.

**Measurements and reliabilities.** The measurements for three dimensions of SCM out of four were adapted from Li's (2006) study (i.e., strategic supplier partnership, customer relationship, and information sharing) to suit for the apparel or soft goods industry. Strategic supplier partnership (SSP) was operationalized as the extent to which the long-lasting relationships among the organizations and their suppliers are sought. Customer relationship (CR) was operationalized as the degree to which a company tries to manage customer's complaints, build long-lasting relationships with customers, and improve customer satisfaction. Information sharing (IS) was operationalized as the extent to which critical and exclusive information is communicated between a company and its suppliers and customers. Process integration (PI) was intended to measure the degree to which a company is willing to work together with its suppliers and customers to have a continuous and efficient flow of materials and resources. Reported reliability coefficients of the three measurement scales ranged from .78 to .86 (Li et al., 2006), which were considered as highly reliable. The process integration scale was adapted from Miguel and Brito's (2011) study. The reported reliability coefficient (Cronbach's alpha) for this scale was .83 (Miguel & Brito, 2011). The items in the four scales were modified to be appropriate for the study's context and respondents.

The dependent variables for this study were the four CA performance areas

critical in the apparel sector (i.e., cost, quality, delivery, and flexibility). The measurements for cost, quality, and delivery CAs were adapted from Li et al. (2006), and the flexibility CA was adapted from (Awwad, Khattab, & Anchor, 2013). The scale for the cost CA was intended to measure the ability of a company to compete against major competitors based on low price. Similarly, quality CA included the items to measure the ability for a company to offer product quality and performance that create a higher value for customers. Delivery CA included the items to measure the ability to provide the type and volume of products required by customers on time. The flexibility CA measured the ability for a company to respond to changes in the contractual agreements or market. The reported reliabilities of this scale ranged from .71 to .92 (Awwad et al., 2013; Li et al., 2006).

The items and reliability coefficients from the data collected through the survey are in Table 1. Although the generally agreed lower threshold for Cronbach's alpha is .70, the values above .60 are usually considered to be acceptable (Hair, Black, Babin, & Anderson, 2014). Cronbach's alpha for the cost CA was below the cutoff; however, it was improved to .75 by removing one of the items not converging with other items in the scale. The scores for the scale items were averaged to represent the variable in further analyses.

**Table 1. Correlations of the Variables, Means, SDs, and Reliability of SCM Practices and Competitive Advantage**

| Variables | SSP | CR | IS | PI | Cost CA | Quality CA | Delivery CA | Flexibility CA | Means | *SD* | Reliability Alpha |
|---|---|---|---|---|---|---|---|---|---|---|---|
| SSP | 1.00 | .50** | .59** | .58** | .04 | .31** | .37** | .29** | 4.20 | .52 | .72 |
| CR | .50** | 1.00 | .32** | .45** | .01 | .15 | .24* | .21* | 4.23 | .54 | .67 |
| IS | .59** | .32** | 1.00 | .58** | .13 | .18 | .36** | .34** | 3.61 | .75 | .78 |
| PI | .58** | .45** | .58** | 1.00 | .14 | .30** | .25** | .26** | 3.99 | .72 | .78 |
| Cost CA | .04 | .01 | .14 | .14 | 1.00 | .11 | .23* | .24* | 2.88 | .78 | .75 |
| Quality CA | .31** | .15 | .18 | .30** | .11 | 1.00 | .33** | .34* | 3.52 | .45 | .80 |
| Delivery CA | .37** | .24* | .36** | .25** | .23* | .33** | 1.00 | .51** | 3.47 | .59 | .81 |
| Flexibility CA | .29** | .21* | .34** | .26** | .24* | .34** | .51** | 1.00 | 3.34 | .51 | .82 |

*Note.* Based on a scale of 1-5. ** Correlation is significant at 0.01 level (2-tailed); * Correlation is significant at 0.05 level (2-tailed)

**Table 2. Demographic Characteristics of the Respondents and their Companies**

| Variable | Description | Frequency ($N$ = 117) | Percentage ($N$ = 117) |
|---|---|---|---|
| Sex | Male | 102 | 87.18 |
| | Female | 5 | 4.27 |
| Age | 18 and below | 0 | 0.00 |
| | 19-24 | 3 | 2.56 |
| | 25-30 | 80 | 68.38 |
| | 31-36 | 24 | 20.51 |
| | 37-42 | 3 | 2.56 |
| | 43-48 | 0 | 0.00 |
| | 49-54 | 1 | 0.85 |
| | 55 and above | 1 | 0.85 |
| Job Title | Top Management (e.g., MD, CEO, GM, AGM) | 19 | 16.20 |
| | Upper Management (e.g., DGM, Sr. Manager, Manager, Merchandiser) | 41 | 35.00 |
| | Middle Management (e.g., officer, executive officer) | 42 | 35.90 |
| | Entry Level management | 4 | 3.50 |
| Establishment | 1970-1980 | 12 | 10.30 |
| | 1981-1990 | 13 | 11.11 |
| | 1991-2000 | 41 | 35.01 |
| | 2001-2010 | 30 | 25.64 |
| | 2011-2019 | 14 | 11.97 |
| Ownership | Foreign company owned | 21 | 17.90 |
| | Bangladeshi company owned | 72 | 61.60 |
| | Joint ownership with BGD | 5 | 4.30 |
| | Others | 6 | 5.10 |
| Employees | 1,000 and below | 19 | 16.20 |
| | 1,001-5,000 | 30 | 25.64 |
| | 5,001-10,000 | 25 | 21.40 |
| | 10,001-15,000 | 12 | 10.30 |
| | 15,000 and above | 24 | 20.50 |
| Annual sales | $100 million USD and below | 49 | 41.90 |
| | $101-US $500 USD million | 41 | 35.00 |
| | $501 USD and above | 18 | 15.40 |

*Note.* Percentage calculations is based on total useable (i.e., 117) responses.

## Analysis and Results

### Sample Characteristics

The descriptive statistics for the respondents and their companies are presented in Table 2. Among 117 respondents, 102 (87.18%) were males, and 5 (4.27%) were females. The average number of work years at their current company was five years (*SD*=3.56; n=111).

Most of the respondents (51.28%; n=60) were in the top and upper management positions at their respective companies and 46 (39.32%) possessed middle and entry-level management positions. The majority of the companies were established between 1991-2010 (60.65%; n = 71), approximately 20-30 years old, and most of them were Bangladeshi owned companies (61.60%; n=72). The majority of the companies had employees between 1,001 and 15,000 (57.34%; n=67).

**The effect of SCM Practices on Competitive Advantage**

The mean value of the scale items was used to represent the extent of each variable for further analysis. Table 1 also reports the descriptive statistics and the correlations among the variables. Customer relationship exhibited the highest mean score (*M*=4.23; *SD*=.54) than the other three SCM dimensions (see Table 1). The second highest dimension was strategic supplier partnership (*M*=4.20; *SD*=.52), followed by process integration (*M*=3.99; *SD*=.72) and information sharing (*M*=3.61; *SD*=.75).

Multiple regression analyses were performed to test hypotheses. The first model was run on cost CA to test *H1*. None of the independent variables showed significance. Therefore, the *H1* was rejected. The result shows that both strategic supplier partnership (β= .22, $p<.10$) and process integration (β= .20, $p<.10$) were moderately related to quality CA [$R^2$=.082, $F$ (4, 106) =3.47, $p<.01$]. The model explained a total of 8.2% of the variance. Thus, *H2* was selectively supported, but the weak model performance was noted. Another model run on the delivery CA (*H3)* explained 14% of the total variance [$R^2$=.14, $F$ (4, 105) =5.36, $p<.001$]. Only information sharing was significantly related to delivery CA (β= .23, $p<.05$). *H3* was selectively supported. The flexibility CA was regressed on the four dimensions of SCM practices to test Hypothesis 4 (*H4)* [$R^2$=.11, $F$ (4, 105) =4.22, $p<.01$]. Only information sharing (β= .27, $p<.05$) was significant for estimating flexibility CA. *H4* was selectively supported. Table 3 summarizes the results of the analyses.

**Table 3. Results of the Multiple Regression Analysis**

| | Model 1-Cost CA | | | Model 2-Quality CA | | | Model 3-Delivery CA | | | Model 4-Flexibility CA | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Independent variable | *B* | *SE* | *β* | *B* | *SE* | *B* | *B* | *SE* | *β* | *B* | *SE* | *β* |
| SSP | -.11 | .20 | -.07 | .19 | .11 | .22$^{\dagger}$ | .21 | .14 | .29 | .05 | .12 | .05 |
| CR | -.16 | .18 | -.11 | -.03 | .10 | -.04 | .13 | .12 | .12 | .08 | .11 | .08 |
| IS | .12 | .13 | .12 | -.03 | .07 | -.04 | .17 | .09 | .23* | .19 | .08 | .27* |
| PI | .20 | .14 | .18 | .14 | .08 | .22$^{\dagger}$ | -.04 | .10 | -.05 | .04 | .09 | .05 |
| $R^2$ | .04 | | | .12 | | | .17 | | | .14 | | |
| Adjusted $R^2$ | .01 | | | .08 | | | .14 | | | .11 | | |
| *F* | 1.13 | | | 3.47** | | | 5.36*** | | | 4.22** | | |

*Note.* $^{\dagger}P<0.10$; $^{*}P<0.05$; $^{**}P<0.01$; $^{***}P<0.001$

## Discussion

### General Discussion

Interestingly, none of the SCM practices dimensions were found significantly related to cost CA in this study. It seems to be due to the fact that most Bangladeshi apparel manufacturers have primarily been focused on low-cost products compared to other global competitors (McKinsey & Company, 2013). Although many previous studies in general manufacturing (Lee et al., 2007; Li et al., 2006; Miguel & Brito, 2011) indicated that SCM practices resulted in cost reduction through reduced manufacturing cost, logistics cost, and inventory cost, it seems that the none of the SCM dimensions make a difference in cost reduction in the Bangladeshi apparel sector. Using its abundant cheap workforce, the sector has been able to provide lower prices compared to global competitors (J. Hasan, 2013). However, knowing that emphasizing only the low cost has a limit in advancing the industry, they must develop strategic differentiation to compete globally as well as domestically. It could also be that the manufacturers are in an early stage of SCM where further knowledge or resources are required to differentiate products and services through efficient SCM practices

The results of this study support the notion that each of the SCM practices dimensions have different impacts on different performance areas of competitive advantage. While the collective influences of SCM practices on all areas of competitive advantage were not evident in the results, we highlight the importance of focused differentiation. Depending on the resources, product characteristics, and customer characteristics, Bangladeshi manufacturers can project and strengthen certain area(s) of competitive advantages in addition to low cost.

We found strategic supplier partnership and process integration were moderately related to quality CA. The result indicates that strategic supplier partnership and process integration can be effective for Bangladeshi apparel manufacturers in achieving quality competitiveness. This finding may be inconclusive, yet consistent with findings of previous studies where a significant relationship between strategic partnership and product quality was found (Handfield et al., 1999). By harnessing all processes in procuring and production, the manufacturers could be able to differentiate themselves with upgraded quality.

We found that information sharing was significantly related to delivery CA. Previous studies have also reported that higher levels of information sharing and close relationships with suppliers resulted in reduced production and procurement lead-times and thus increased the delivery speed (Li et al., 2006; Miguel & Brito, 2011). In addition, the effort put in providing information and making it visible to other players in the supply chain could lead to faster and accurate business decisions (Gandhi, Shaikh, & Sheorey, 2017). Those who produce products that are sensitive to fashion trends, weather, or other unforeseen incidences could focus on efficient and systematic information sharing activities with their supply chain partners. In the past, Bangladeshi manufacturers have experienced delays caused by power shortages, workers unrest, and wrong management decision in production planning, bureaucratic problems in the port and export related activities, and political turmoil (Chowdhury, Islam, & Alam, 2018). Communicating with the customers with the beforementioned problems in advance or promptly could enact the customers' collaboration or alternative directions to solve the problems in the earlier stages of production or delivery.

Information sharing activities were found significantly related to delivery and flexibility CAs. This implies that sharing information related to forecasting, production, and inventory could facilitate the production and distribution planning processes. We recommend investing in communication through advanced, latest technologies (e.g., automated ordering, Enterprise Resource Planning) with

customers and suppliers. When all players in the chain are connected and integrated through shared real-time information, any problems by a sudden change could be resolved effectively hence improving delivery and flexibility performance.

The results did not show any significant relationships between customer relationships and the four areas of competitive advantage. Large, powerful high-street retailers with multiple and often internationally located outlets, so-called 'retailers' (e.g., H&M, Marks & Spencer, JC Penney, Wal-Mart), are the main customers of the Bangladeshi apparel manufacturers. Therefore, it might be that they have limited power and are thus likely to be controlled by powerful retailers (J. Hasan, 2013). Therefore, such mutually beneficial relationships that have been emphasized in the SCM literature may not be realistic in the apparel industry. It is also possible that, because the manufacturers primarily communicate with the retailers' representatives or intermediaries (e.g., buyers, liaison office, sourcing agent, import, or export agency), close partnerships may be difficult to be established.

**Theoretical and Practical Implications**

Theoretically, this study fills the gap by exploring SCM practices in the labor-intensive industrial sector in a lower-middle-income country, the Bangladesh apparel industry. This study also offers significant practical implications. The results indicate that Bangladeshi apparel manufacturers could selectively implement and practice for strategic supplier partnerships, information sharing, and/or process integration based on their company's strategic choices to differentiate quality, delivery, and/or flexibility in the global market. It has been reported that most of the Bangladeshi apparel manufacturers do not often precisely know what to do in SCM, primarily due to limited comprehension of the concept (J. Hasan, 2013). The findings of this study, therefore, can provide the managers of Bangladeshi apparel manufacturing companies valuable suggestions to enhance their competitiveness. Further, the industry leaders and policymakers could direct their efforts to build policies and strategies to allow the manufacturers to continuously improve management skills and knowledge towards strategic needs and focused SCM.

**Limitations and Future Studies**

Although modified to fit the apparel industry, the four SCM practices measurements used in this study were primarily adapted from the studies that focused on the technology and other capital-intensive sectors. An elaboration through a qualitative study could result in a more practical measurement tool for evaluating SCM practices in the apparel industry. This study could be extended to the industry-specific concept such as lean supply, ethical SCM, green SCM practices, and sustainable SCM practices. The data used in this study were collected from the upstream of the supply chain or manufacturing side in Bangladesh. Future research could investigate SCM from the demand side partners (i.e., buyers and retailers) and/or replicate this study in similar developing countries to confirm the findings. By comparing the different views of SCM from different players in the supply chain, researchers will be able to identify the facilitators and obstacles of effective supply chain management.

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