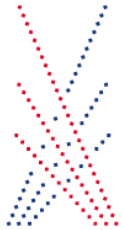

BRITISH ACADEMY
OF MANAGEMENT

BAM
CONFERENCE

3RD-5TH SEPTEMBER

ASTON UNIVERSITY BIRMINGHAM UNITED KINGDOM

This paper is from the BAM2019 Conference Proceedings

About BAM

The British Academy of Management (BAM) is the leading authority on the academic field of management in the UK, supporting and representing the community of scholars and engaging with international peers.

http://www.bam.ac.uk/

Toward a framework for a national system of innovation (NSI) for the readymade garments sector of Bangladesh

BAM2019 Developmental Paper

Track 11: Inter-Organisational Collaboration: Partnerships, Alliances and Networks

Mamun Ala

Australian Institute of Business

27 Currie St, Adelaide SA 5000, Australia

mamun.ala@aib.edu.au

Ashokkumar Manoharan

Flinders University

Sturt Road, Bedford Park, Adelaide, SA 5042, Australia

ashokkumar.manoharan@flinders.edu.au

Toward a framework for a national system of innovation (NSI) for the readymade garments sector of Bangladesh

Abstract

Bangladesh is the second largest exporter of the readymade garments (RMG) in the world. The growth of the industry was stimulated by quota free exports to developed countries including the USA and the EU and under a protective regime. The competitiveness of the industry largely hinges on cheap labour and most firms produce low value apparels using imported raw materials. As there was limited incentive for most RMG firms to pursue innovation, hitherto, the sector has remained a low-technology-intensive industry. In recent years the competitiveness of the Bangladeshi RMG sector has been impacted by a number of factors including the abolition of quota free export facilities and the rapid transformation of the global clothing industry from a labour-intensive and low-technology-sector to a capital-intensive and high-technology sector. The aim of this study is to assess the potential impact of these challenges on the sector and propose a national system of innovation (NSI) for the RMG sector to promote firm- and institutional-level collaborative R&D and innovation activities, enhance the flow of international technology transfer and thereby improve international competitiveness.

Key words: readymade garments industry; innovation; collaboration; national system of innovation; international competitiveness

[2,343 words excluding references]

Introduction

The readymade garments (RMG) industry in Bangladesh is the second largest exporter of apparel in the world. The initial growth of the RMG sector was stimulated by four factors, namely simple technology of apparel making, low labour cost, the government's supportive role and the Multi-Fibre Arrangement (MFA), an an international trade agreement (introduced in 1974) that allowed Bangladesh quota free export to developed countries including the USA (Saxena & Salze-Lozac'h, 2010; Bhuyan, 2012; Yunus & Yamagata, 2012). Bangladesh made considerable gain from the MFA as it improved the international competitiveness of its RMG sector against that of India and China. The European Union (EU) also extended favour to the sector by allowing quota/duty-free imports of apparel from Bangladesh. Also, in the early 1980s the government offered the sector with various financial and non-financial incentives such as duty-free import of garment machinery and raw materials, reduced interest rates on short-term loans, back-to-back letter of credit (L/C) facility (to help entrepreneurs to overcome the problem with working capital) and bonded warehouse facilities (Pack and Saggi, 2006; Mottaleb & Sonobe, 2011; Yunus & Yamagata, 2012). These incentives made it easier to establish new export-oriented RMG factories. Additionally, also promoted the country's RMG exports.

However, under a protective regime and the MFA, the RMG sector in Bangladesh has remained a relatively low-technology-intensive industry (Saxena & Salze-Lozac'h 2010; Yunus & Yamagata, 2012). There was no incentive for most RMG firms to pursue innovation. Most firms produce low value apparels using imported raw materials (mainly from India and China, two major competing countries). The competitiveness of the industry mainly hinges on comparatively cheap labour and an established clientele (Ahmed, 2009; Saxena & Salze-Lozac'h, 2010; Mottaleb & Sonobe, 2011; Yunus & Yamagata, 2012). According to Yunus & Yamagata (2012, p. 19-20),

> 'In developing world the garments industry runs on three basic operations: cutting, stitching, and pressing/finishing…..Traditionally, high technology and R&D activities have been less prioritized in the garment manufacturing industry…..the technology adoption in the industry has primarily been mass-production focused…..incremental or often imitative.'

What is striking is that in recent years the competitiveness of the RMG sector has been impacted by a number of factors and/or challenges as the following:

1) The MFA expired in 2005 that resulted into a substantial increase in the market shares of China and India in the USA and the EU. Also, in 2013, the USA suspended Bangladesh's Generalised System of Preferences (GSP) facility citing unsafe working conditions and poor labour rights (Islam, Rakib & Adnan, 2016). Currently, Bangladeshi RMG exporters need to pay 15.62% tariff to export apparel items in USA markets, which is higher than that paid by competing countries like China, India and Vietnam (Alam, Selvanathan & Selvanathan, 2017). Brexit and other political changes in EU have also slowed down Bangladesh's RMG export to the EU (Razi, 2017). Additionally, when Bangladesh will graduate from the least developed country (LDC) to a developing country in 2027, the country will lose it preferential treatment status from the EU and therefore 8 to 10% duty will apply to apparel export from Bangladesh to the EU (Hashim, 2019).
2) Many Bangladeshi RMG firms are unable to cope up with the recent rapid transformation of the global clothing industry from a labour-intensive and low-technology-sector to a capital-intensive and high-technology sector (Nordås, 2004; Berg et al., 2011; Sampath 2007; Mohan Kathuria, 2013). The labour productivity in the RMG sector is the lowest in Bangladesh when compared with that of India, China and Vietnam (Saxena & Salze-Lozac'h, 2010). Most firms are unable or unwilling to invest in R&D and innovation and thereby move beyond the boundary of low value-adding skills and engage in higher value adding activities (Sampath 2007; Islam, Rakib & Adnan, 2016). Essentially, the competitive advantage of an RMG firm no longer depends on low cost labour on the ability to produce clothing that meet the tastes and preferences (Nordås, 2004).

Clearly, the above-mentioned exogenous challenges including the expiry of the quota system have created the need for bringing change in the traditional low-technology and labour-intensive business models as well as in the incentive mechanisms adopted by the government. However. there is a general lack of interest among entrepreneurs in Bangladesh to invest in R&D and innovation activities move beyond the boundary of low value-adding skills and engage in higher value adding activities; also, the government is negligent towards strengthening technological infrastructure and backward linkages Sampath 2007; Saxena & Salze-Lozac'h, 2010; Yunus & Yamagata, 2012; Mohan Kathuria, 2013). At the firm level there are a few R&D activities related to product development and quality compliance, but few initiatives have been taken to engage in independent and collaborative research.

Unfortunately, there has been little literature on the potential impact of rapidly changing technology on the RMG sector of Bangladesh, and what can be done in addressing the impact. We posit that a national system of innovation (NSI) for the RMG sector in Bangladesh has the potential to improve firm-level and institutional-level independent and collaborative R&D activities and thereby enhance domestic innovation and increase the flow of international technology transfer. As suggested by Freeman (1987, p.4), an NSI refers to 'the networks of institutions in the public and private sectors, whose activities and interactions initiate, import, modify and diffuse new technologies'. This research addresses five important questions. First, what are the potential impacts of the rapidly changing technology on the RMG industry in Bangladesh? Second, are there any gaps between firms' perceived adverse impacts of the rapidly changing technology and associated adaptive capacity? Third, what are the characteristics of the firms with high level of adaptive capacity (and therefore low level of vulnerability)? Fourth, does R&D/technological collaboration contribute to firm's adaptive capacity to technological change? Fifth, is there a role for a national system of innovation (NSI) in an LDC setting that can promote collaboration in terms of R&D/technology and sustain the industry in the longer run?

The theoretical background and conceptual framework of the study

The concept of NSI is widely discussed in evolutionary economics and the literature on industrial/technology policy and draws the definition of innovation from Joseph Schumpeter (1883–1950). Schumpeter (1934) defined innovation as something more than improving the process. Innovation can be developing new products, introducing improved raw materials, accessing or creating new markets and reorganising the business. Schumpeter viewed the growth of a firm as 'path dependent', involving a process of incorporating new routines (through innovation) so that over time the firm could diversify and enter new markets (Franken, 2008). Therefore, a firm's future technological change or dynamic capability depends on its past technological change. Moreover, firm-level technological change is cumulative in nature (Nelson & Winter, 2002).

The NSI approach focuses on 'system-level' analysis and becomes important in the context of analysing knowledge-intensive industries characterised by uncertainties, innovation and R&D (Lundvall 2007; Guennif & Ramani, 2012). As a formal R&D system, it focuses on technological catch-up and economic growth through improving R&D-intensity of R&D-intensive organisations such as firms, academia and public research centres so that firms,

considered at the centre of the R&D system, can improve their dynamic capability through enhanced innovation activities (Lundvall, 1992, 2007; Metcalfe, 1994; Freeman, 1995; Nelson, 2008; Lundvall et al., 2009).

Traditionally, an innovation system is about high knowledge-intensive industries, but scholars suggest that innovation is also important for low knowledge/technology sectors and whether a NSI should be hi-tech or lo-tech in a developing country is determined by its level of economic, institutional and infrastructure development (Mytelka, 2000; Intarakumnerd, Chairatana & Tangchitpiboon, 2002). However, NSIs rare in developing countries with the exception of India, China, Cuba and Brazil; these countries have established NSIs for the generic pharmaceutical industry (Lundvall et al., 2009; Malerba & Mani, 2009; Guennif & Ramani, 2012). Also, there are relatively few studies on the formation and success of an NSI in developing countries and LDCs (Intarakumnerd, Chairatana & Tangchitpiboon, 2002; Asheim, Coenen & Vang, 2007). This study aims to fill this gap in the literature.

This study explores the degree of firm-level and broader system-level capability and examines the role of R&D/technology collaboration in promoting innovation and thereby sustainability, growth and competitiveness of the RMG sector in Bangladesh. Given that the uncertainty driven by technological change is likely to lead to considerable changes in market competition, we examine the factors that influence firms' dynamic capability and adaptive strategies in rapidly changing environments (Denrel & Powell, 2016). The study conducts an analysis of the Bangladeshi RMG sector's preparedness to face the impending challenges. It is important to extract from the literature various types of firm-level impacts arising from technological, regulatory and compliance-related and competitive factors. We recognize that the potential impact on individual firms' exposure and sensitivity to these challenges will depend on their adaptability. Adaptability is related to a firm's access to resources and skills and the possession of capabilities to cope better with the current or potential external stresses (McCarthy et al., 2001). While the strength of a firm's adaptive strategy will depend on internal resources, it can be augmented by external support, such as the initiatives and programmes undertaken by the government, industry-academia linkages and knowledge transfer from developed countries. As the evolutionary perspective of innovation views a firm's innovation capacity to be cumulative in nature, then a firm's current adaptive capacity will be an important determinant of its adaptive capacity in the future. Accordingly, our conceptual framework encompasses both micro- and macro-level factors related to uncertainty and the role of collaboration in reducing uncertainty. The findings provide a basis for making recommendations with regards to the role

of policy to promote collaboration and to enhance the innovative capabilities of the Bangladeshi RMG sector.

Research methodology

This research recognises the importance of understanding the broader socio-economic and political context in relation to the impact of rapid technological and competitive challenges on the Bangladeshi RMG sector. It adopts a triangulation mixed methods approach – using both quantitative and qualitative empirical analyses.

The quantitative analysis is based on firm-level survey data, which measures various types of capability gaps of Bangladeshi RMG firms as perceived by owners and senior managers and provides insights into the factors associated with both impact and firm-level adaptive strategies in adjusting to the uncertainty and challenges (Wall et al., 2005). The quantitative study also involves the application of hierarchical cluster analysis to classify firms in terms of their adaptive capacity to deal with uncertainty and challenges. The classification/grouping of firms will be followed by a comparison of each of the group's typical characteristics and adaptive strategies as well as the capability gap. This will also enable us to explore whether R&D/technological collaboration can reduce this gap (Nardo et al., 2005; Cooksey, 2009).

The qualitative component, based on face-to-face in-depth interviews with major stakeholders in the RMG sector including owners/managers, trade association leaders, think tank members (including university faculty members) and government officials, explores various dimensions of firm-level and macro-level awareness and preparedness related to the impending challenges facing the industry. It also investigates stakeholders' perspectives regarding the need to extend support for collaborative R&D and an innovation network for the RMG sector in Bangladesh. For the qualitative component, the study uses the framework analysis suggested by Spencer and Ritchie (2002).

The results from the two components are brought together to address the broader research theme associated with the role of an NSI to promote innovation in the RMG sector in Bangladesh.

Contribution of the study

Empirical research on the potential impact of rapid technological change on RMG firms in Bangladesh, and on its effectiveness in promoting innovation capabilities is lacking. Also, there

is little literature that provides a deep understanding of how academic/research institutions in Bangladesh can be strengthened to provide better support for collaborative R&D and innovation by firms and industry in their efforts to improve innovation. The findings of this study provide key insights into the capability gap of the RMG industry in Bangladesh, whether R&D/technological collaboration can reduce this gap, and the potential role for a national system of innovation for the sector in creating and strengthening linkages between users and producers of knowledge in terms of R&D/technology collaboration. Moreover, this study explores the complex relationships between the major stakeholders in order to inform policy makers so that they can create appropriate conditions to promote conditions that will help ensure the long-term viability of the industry.

The major contributions of this study to the literature and theory are that it:

- empirically investigates the firm-level and system-level impact of rapid technological change and quality and compliance related challenges on the RMG industry in Bangladesh;
- explores the extant collaborative linkages between industry, academia/universities and public and private research institutions in the context of the RMG industry;
- uses the notion of 'path-dependency' to emphasize the need for a system-level approach (and multi-stakeholder collaboration) and presents the framework of a NSI for a low knowledge/technology sector (RMG industry in Bangladesh) in a least developing country (the concept of a NSI largely developed in the context of developed countries and mainly for high knowledge/technology-intensive industries);
- outlines the priority areas that need to be considered to establish the collaborative linkages that might foster R&D and innovation in the sector; and
- provides important insights about the role of government in strengthening various linkages in terms of R&D/technology collaboration in the context of the RMG industry.

The findings enable a basic framework for a state-supported collaboration network or NSI to be provided, and this ought to be considered by policymakers in order to promote innovation in the sector in a way that is consistent with the broader social welfare objectives of the government.

Further progression:

As next steps for the completion of this paper, currently we are focusing on three things: 1) conducting further literature review to be able to understand the technological, regulatory, compliance-related and competitive challenges facing the RMG sector in Bangladesh; 2) working on research methodology and develop survey instruments and qualitative interview questionnaires; and 3) preparing documents for ethics approval for the field study. We are confident that we will be able to start the data collection process by December 2019.

References

Ahmed, N., 2009. Sustaining ready-made garment exports from Bangladesh. *Journal of Contemporary Asia*, *39*(4), pp.597-618.

Alam, M.S., Selvanathan, E.A. and Selvanathan, S., 2017. Determinants of the Bangladesh garment exports in the post-MFA environment. *Journal of the Asia Pacific Economy*, *22*(2), pp.330-352.

Asheim, B., Coenen, L. and Vang, J., 2007. Face-to-face, buzz, and knowledge bases: sociospatial implications for learning, innovation, and innovation policy. *Environment and Planning C: Government and Policy*, *25*(5), pp.655-670.

Berg, A., Hedrich, S., Kempf, S. and Tochtermann, T., 2011. Bangladesh's ready-made garments landscape: The challenge of growth. *McKinsey & Company, Inc. Apparel, Fashion & Luxury Practice*, pp.1-24. New York: McKinsey & Company.

Bhuiyan, Z.A., 2012. Present status of garment workers in Bangladesh: An analysis. *IOSR Journal of Business and Management (IOSRJBM)*, *3*(5), pp.38-44.

Cooksey, R.W., 2007. Illustrating statistical procedures: For business, behavioural & social science research, Prahan. *Victoria: Tilde University Press*.

Denrell, J. and Powell, T.C., 2016. Dynamic capability as a theory of competitive advantage: contributions and scope conditions. Oxford Handbook of Dynamic Capabilities.

Freeman, C., 1987. *Technology policy and economic performance* (p. 34). Great Britain: Pinter Publishers.

Freeman, C., 1995. The 'National System of Innovation' in historical perspective. *Cambridge Journal of economics*, *19*(1), pp.5-24.

Guennif, S. and Ramani, S.V., 2012. Explaining divergence in catching-up in pharma between India and Brazil using the NSI framework. *Research Policy*, *41*(2), pp.430-441.

Hashim, S.M., 2019 ' RMG in 2018 and what lies ahead', *The Daily Star*, 7 January, viewed 8 February 2019, < https://www.thedailystar.net/opinion/no-frills/news/rmg-2018-and-what-lies-ahead-1681306>.

Intarakumnerd, P., Chairatana, P.A. and Tangchitpiboon, T., 2002. National innovation system in less successful developing countries: the case of Thailand. *Research policy*, *31*(8-9), pp.1445-1457.

Lundvall, B.Å. ed., 1992. *National systems of innovation: Toward a theory of innovation and interactive learning* (Vol. 2). Pinter Publisher.

Lundvall, B.Å., 2007. National innovation systems—analytical concept and development tool. *Industry and innovation*, *14*(1), pp.95-119.

Lundvall, B.Å., Joseph, K.J., Chaminade, C. and Vang, J. eds., 2009. *Handbook of innovation systems and developing countries: building domestic capabilities in a global setting*. Edward Elgar Publishing.

Malerba, F. and Mani, S. eds., 2009. *Sectoral systems of innovation and production in developing countries: actors, structure and evolution*. Edward Elgar Publishing.

Metcalfe, J.S., 1994. Evolutionary economics and technology policy. *The economic journal*, *104*(425), pp.931-944.

Mohan Kathuria, L., 2013. Analyzing competitiveness of clothing export sector of India and Bangladesh: Dynamic revealed comparative advantage approach. *Competitiveness Review: An International Business Journal*, *23*(2), pp.131-157.

Mottaleb, K.A. and Sonobe, T., 2011. An inquiry into the rapid growth of the garment industry in Bangladesh. *Economic Development and Cultural Change*, *60*(1), pp.67-89.

Mytelka, L.K., 2000. Local systems of innovation in a globalized world economy. *Industry and innovation*, *7*(1), pp.15-32.

Nardo, M. Saisana, M. Saltelli, A. Tarantola, S. Hoffman, A. & Giovannini, E., 2005. *Handbook on constructing composite indicators: methodology and user guide*, OECD Publishing.

Nelson, R.R. and Winter, S.G., 2002. Evolutionary theorizing in economics. *Journal of economic perspectives*, *16*(2), pp.23-46.

Nelson, R.R., 2008. Economic development from the perspective of evolutionary economic theory. *Oxford development studies*, *36*(1), pp.9-21.

Nordås, H.K., 2004. *The global textile and clothing industry post the agreement on textiles and clothing* (No. 5). WTO discussion paper.

Razi, Z.H. 2017 ' RMG export to the EU: The challenges ahead of Bangladesh', *The Financial Express*, 29 November, viewed 10 February 2019, < https://thefinancialexpress.com.bd/special-issues/rmg-textile-5/rmg-export-to-the-eu-the-challenges-ahead-of-bangladesh-1511942742>.

Sampath, P.G., 2007. Intellectual property and innovation in least developed countries: Pharmaceuticals, agro-processing and textiles and RMG in Bangladesh. A study for UNCTAD-ALDC Division, United Nations University-MERIT.

Saxena, S.B. and Salze-Lozac'h, V., 2010. Competitiveness in the Garment and Textiles Industry: Creating a supportive environment. *A Case Study of Bangladesh*. Occasional Paper no. 1, The Asia Foundation, Dhaka.

Schumpeter, J.A., 1934, *The Theory of Economic Development*, Harvard University Press.

Spencer, L. and Ritchie, J., 2002. Qualitative data analysis for applied policy research. In *Analyzing qualitative data* (pp. 187-208). Routledge.

Wall, T.D., Michie, J., Patterson, M., Wood, S.J., Sheehan, M., Clegg, C.W. & West, M. 2004, 'On the validity of subjective measures of company performance', *Personnel Psychology*, 57(1), pp. 95-118

Yunus, M. and Yamagata, T., 2012. The garment industry in Bangladesh. *Dynamics of the Garment Industry in Low-Income Countries: Experience of Asia and Africa (Interim Report).* Chousakenkyu Houkokusho, IDE-JETRO.