

The Impact of B2B E-commerce on Japanese Investment in East Asia

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With the diffusion of Internet technology, electronic commerce, and especially B2B e-commerce, is spreading in East Asia as well as the rest of the world. B2B transactions encourage movement toward more open organizational structures for inter-company and intra-company relationships. The activities of Japanese corporations in the region have been characterized as exclusive rather than inclusive of the local economies, and host nations have expressed dissatisfaction that Japanese investments have not contributed more to the development of local industries. This paper examines the hypothesis that adoption of B2B transactions by Japanese firms in response to the external competitive threat may mitigate or even solve this problem.

The first part analyzes the characteristics of B2B e-commerce and its prospects in East Asia. The second part discusses the B2B strategy of Japanese corporations in East Asia, arguing that Japanese corporations will introduce B2B e-commerce to East Asia as part of their global response to the competitive threat from foreign, particularly American, corporations, which have better adapted to IT technology and globalization. The third part analyzes Japanese firms' current global strategy to adopt B2B e-commerce and its implications for inter-company relations in East Asia. The final section discusses the issues and agenda for increasing B2B e-commerce between Japan and East Asia.

Characteristics of B2B E-commerce

In line with the outlook for global e-commerce, most forecasts predict rapid growth of e-commerce in East Asia, dominated by B2B rather than B2C transactions. The productivity gains from B2B that stimulate this growth arise particularly from supra-normal returns to Internet-related investments and from "network externalities".¹ Because of network externalities, the benefit of B2B e-commerce increases as the number of participants expands. B2B thus holds great potential for productivity improvement in economies outside the United States as they catch up in Internet investment.

B2B e-commerce involves conducting business-to-business transactions through Internet websites. Firms can significantly improve efficiency and productivity by carrying out such exchanges as sourcing, negotiating, transacting and payment, supply chain management (SCM), and even collaborative design and product life cycle work, on the Internet.

B2B e-commerce develops

- From non-strategic, generalized, and standardized products to customized products:
- From repetitive transactions to unique and infrequent transactions
- From simple exchange functions such as sourcing and negotiating, transactions, payment, and managing supply chains to more sophisticated functions such as collaborative design and product development
- From organization by a single firm or group to industry-wide organization

In the process of this evolution, B2B e-commerce is inexorably tied to the comprehensive restructuring of corporations. A firm needs to adjust its organizational structure in order to reap the greatest gains from the introduction of Internet-based transactions. The IT equipment manufacturing industry is a leader in creating new organizational models fit for Internet technology with companies unlinking the functions of the value chain and reconstituting them through new intra-firm and inter-firm networks that maximize efficiency. A standardized digital

¹ R. E. Litan and A. M. Rivlin, "The Economy and the Internet: A Preliminary Assessment," paper presented at the T5 Researchers' Meeting, Munich, October 19, p. 20. Network externalities refer to the phenomenon that the benefits of using a particular technology rise as more users are hooked into the network. A third channel through which Internet investment impacts productivity is increased capital inputs.

network among U.S., European, and Japanese automobile and parts manufacturers may fundamentally change the ways of developing, designing, producing, transporting, and selling automobiles and to lead to a global restructuring of the industry (Noguchi). The new organizational structures are generally less hierarchical internally and more extensively networked with outside businesses.

The outlook for B2B in East Asia is positive. The growth of the region as a production base, particularly for IT products, with many manufacturers, subcontractors, and suppliers could generate powerful demand for B2B market places (Cheng). B2B is less likely than B2C to be impeded by the political and cultural sensitivities that exist in the region and by diversity of culture, language, and geography. On the other hand, the lack of telecommunication and other infrastructure in some economies and limited technological expertise of the region's many small and medium-sized enterprises may constrain the development of B2B e-commerce, in the short run at least.

At the forefront of B2B in East Asia are rapidly growing exchanges linking buyers and sellers in specific industries, regions, or affinity groups² (Asia2B.com of Hong Kong, High Trust of Taiwan, and Asia-Steel.com. in partnership with Mitusi, Chen) and e-marketplaces initiated by large sellers of commodity or standardized products (China National Petroleum and Taiwan Semiconductor Manufacturing).³ Many of these e-marketplaces have been developed in partnership with American operators and seek to cross the region's national, cultural, and linguistic borders to benefit from network externalities. (Often websites in Taiwan and Hong Kong are accessible in English and in different Chinese characters sets.⁴) Even so, the region has yet to develop more promising buyer-initiated B2B marketplaces, and most existing ones are not yet profitable.

IT hubs equipped with relevant telecommunications infrastructure and engineering and professional services are expected to play a major role in B2B in East Asia because of the geographical, cultural, and developmental diversity among the region's economies. Singapore, Hong Kong, and Sidney are vying for this place based on their supply of IT workers and economic openness.

East Asian governments have actively supported the development of B2B e-commerce by helping to launch trade fair sites, by providing incubation facilities, and by attracting supporting businesses (Sakura).

Defensive Adoption of B2B E-commerce by Japanese Corporations

We argue that the B2B strategy of Japanese corporations in East Asia is an extension of their global strategy to utilize B2B, which itself is part of comprehensive efforts to reorganize in order to raise efficiency and survive in global competition.

New organizational structures adapted to the Internet world are posing a competitive threat to Japanese corporations. Since the 1990s, the global electronic manufacturing service (EMS) has been outperforming the old Japanese electronics industry model of vertically integrated product development and production within a relatively closed corporate group. The EMS are taking on the production function for original equipment manufacturers (OEMs) and expanding into SCM and even into product development. The new EMS business model offers such advantages as economies of scale, speed to volume production, diversification of market risk by sales to multiple customers, and specialization in production.

² "Technophile-Asia Embrace B2B E-Commerce," April 1, 2000, <http://www.asia1.com.sg/timesnet/data/ab2343.html>

³ Nikkei Sangyou Shimbun, August 24, 2000.

⁴ Sakura Institute of Research, "A New Age in Asia Opened by E-Commerce (in Japanese)," Japan Economic Journal (Nihon Keizai Shimbun) November 10, 2000.

The EMS challenge comes largely from American firms and some non-Japanese East Asian firms. Japanese players are conspicuously absent from this industry, with Taiwanese and Singaporean firms the only players from the region. As the EMS move into SCM and product development and as the industry becomes more concentrated, EMS are likely to take over from OEMs as the main organizers of supply chains and therefore of B2B marketplaces. Thus, unless Japanese players move into the EMS industry, the presence of Japanese OEMs in East Asia's procurement markets will decline and their role in B2B e-commerce in East Asia will be limited⁵.

Responses of Japanese Corporations

Japanese corporations initially adopt B2B e-commerce and restructuring within Japan before extending them to the rest of the world. These steps are in response to the competitive challenge by foreign corporations are usually part of a wider corporate strategy to increase efficiency, for example, by reducing parts procurement costs.⁶

Corporate Reorganization

Japanese corporations have started to concentrate their businesses and to create more horizontal and networked organizational structures. Japanese electronics firms such as Sony and Matsushita are breaking up the vertically integrated organization of the industry by separating manufacturing divisions as independent companies, much like the EMS.⁷ Toshiba's "Management Innovation 2001" project, modeled after General Electric's Six Sigma project, will reform the company's organization and corporate culture and eliminate the hierarchical management structure.⁸

Trading Houses Move into E-business

Trading houses have been the first to move into B2B businesses in Japan. C. Itoh, Mitsui and Co., Mitsubishi Trading Co., Marubeni have established B2B exchanges and entered into various other e-commerce activities, sometimes through agreements with domestic or foreign firms with the technological and operating expertise to run B2B exchanges. These initiatives are viewed as a preemptive strike against the dis-intermediation of the trading houses by B2B e-commerce. The scope of these ebusinesses naturally extends to the rest of East Asia because of the trading houses' involvement in the region.

Japanese Manufacturers Move to B2B E-commerce Gradually

Along with the corporate reorganization efforts mentioned above Japanese corporations in the manufacturing sector have started to move into B2B e-commerce. Leading manufacturers such as Toyota, Fujitsu and NEC have started to shift existing transactions, including those with SMEs onto the Internet as an extension of their EDI systems. These efforts are primarily oriented to procurement and as yet confined within individual companies or company groups. NEC is constructing an optimal procurement system to connect its ten procurement offices worldwide including six in Asia.⁹ The automobile industry, where firms can benefit from volume procurement of many general-use parts has taken steps to introduce B2B transactions on an industry-side basis. There are also some efforts to utilize the Internet in product development activities.

⁵ Japanese electronics firms' relatively low level of outsourcing may be due to the fact that they are dominant in the consumer electronics sector, which is based on analog technology, while American firms are dominant in the IT sector which is based on digital technology. Production of analog-based products is less standardized and more complex and therefore more difficult to outsource than production of digital-based products. (Interview with a Japanese electronics company, Singapore, November, 2000.)

⁶ "Toyota plans to reduce the parts cost by one trillion yen, or a third (in Japanese)," Japan Economic Journal, December 21, 2000.

⁷ "Manufacturing reform in the electronics industry: declaration of independence by factories. Part 1 (in Japanese)," Japan Economic Journal, December 12, 2000.

⁸ Comment by Tadashi Okamura, President, Toshiba Corporation in an interview with Shukan Daiyamondo, October 28, 2000.

⁹ Japan Economic Journal, November 8, 2000.

The moves by Japanese manufacturers are more significant than the initiatives of the trading houses because buyers tend to have more control of and to reap the most benefit from B2B e-commerce. These moves will also be more relevant to the region because of the extensive investments of Japanese manufacturers there.

B2B Moves of Japanese Corporations in East Asia

Now that Japanese corporations have begun to adopt B2B for activities within Japan, we need to ask how their procurement practices in Asia will change as they expand utilisation of B2B transactions from basic procurement to more complex SCM activities.

Japanese operations in East Asia are currently characterized by

- Increasing production of low-end final products in East Asia in addition to production of parts.
- Heavy dependence on Japanese suppliers located in Asia, although local suppliers have become more competitive, particularly in the IT sector in the NIEs and in Southern China, where Taiwanese and Hong Kong firms have a significant presence.
- Increased concentration on production of key devices in the electronics industry as semiconductor chips incorporate more and more functions.
- Increasing concentration in the manufacturing sector as large EMS increase their share and as Japanese corporations carry out their strategies of worldwide consolidation and reorganization by consolidating investments in the region and breaking supply chains into specialized manufacturing, product development, and marketing functions;
- Migration of parts production, especially for IT products, to China and particularly Southern China;
- Increasing use of regional headquarters to coordinate activities in the region.

Japanese corporations are gradually extending B2B e-commerce to their operations in East Asia, after they succeed in implementing it at home. Large Japanese companies that dominate the consumer electronics industry can control the pace of change, but in industries such as PCs and telecommunications where American and European corporations lead Japanese firms have been obliged to adopt B2B transactions more expeditiously. Japanese corporations that supply materials and parts to American computer manufactures such as Dell Computer and Compaq are forced to adopt the American model and have to exchange specifications data and design blueprints over the Internet.

Japanese trading companies have made moves to operate e-marketplaces in East Asia, often in partnership with local firms or experienced B2B operators.

Policy Support from the Japanese Government

Through the Ministry of Economy and Industry (formerly MITI), the Japanese government is cooperating with major Japanese corporations to facilitate the development of B2B marketplaces and digital government in the region. The government intends to use ODA to support the spread of a Japanese electronic certification standard,¹⁰ the development of legal and regulatory systems, and Asia-wide cooperative e-marketplaces.

We think that government support for the expansion of B2B transactions in East Asia involving Japanese corporations will strengthen the network between East Asia and Japan and help to narrow the digital divide within East Asia. But Japanese government policies in support of B2B will have less impact on whether Japanese corporations develop B2B transactions in East Asia than will their own profitability and competitiveness. Government policy to facilitate corporate restructuring at home is most important.

Japanese Corporate Networks in East Asia

¹⁰ Japan Economic Journal, July 12, 2000.

Corporate networks in East Asia will change significantly as Japanese corporations engage in more outsourcing and increase their B2B transactions in the region. The B2B e-marketplaces will probably be organized in conjunction with newly formed specialized production entities or divisions of Japanese corporations. Like EMS these specialized production entities will use B2B transactions extensively to increase production speed and efficiency. The production units of Japanese electronics companies will consolidate both in Japan and in the rest of East Asia. B2B e-marketplaces will develop from simple procurement activities to SCM to product development. To meet the needs of the production entities and to connect with the growing B2B e-marketplaces, local suppliers in East Asia will need to be highly entrepreneurial, technologically oriented, and capable of efficient digital networking.

Agenda for the Expansion of B2B Transactions by Japanese Corporations in East Asia

On the side of East Asian economies standing in the way of expanding B2B transactions with Japanese corporations include the wide disparities in physical and institutional infrastructure, differences in regulation and culture within East Asia, and differences in levels of entrepreneurship between industrial structures centered on SMEs and on large multinational corporations. The NIEs have made better progress in physical and institutional infrastructure than Japan, but the latecomer economies lag.

Regulatory and cultural differences may become a bottleneck for international Internet procurement. Some Japanese corporations are concerned whether the lowering of tariffs within AFTA will be implemented as scheduled after 2002. (Although, if implemented, the tariff reduction scheme will facilitate international procurement in the ASEAN region and foster the development of B2B transactions by Japanese corporations in the region.) According to our interviews with Japanese firms, in some regional economies the paucity of local suppliers that meet Japanese corporations' strict quality criteria limits the possibility of local procurement and stands as a barrier to the expansion of B2B transactions in East Asia. In order for Japanese corporations to expand B2B transactions in East Asia, there must be a concentration of entrepreneurs and engineers to create and manage technology-oriented firms with the capacity to produce high quality parts. Few economies in East Asia meet that condition. Southern China is emerging as a major source of parts supplies, particularly in the IT sector due in part to management by Taiwanese to a lesser extent Hong Kong firms, which maintain product quality by sending their own engineers and managers.

On the Japanese side, one obstacle to expanding B2B transactions with East Asia is the slow pace of corporate reorganization in Japan. In addition, Japanese firms' emphasis on product quality and uniqueness limits the benefits to them from outsourcing through B2B transactions. and their disinclination to encourage employee spin-offs discourages the development of local suppliers that might join in B2B marketplaces. Finally, Japanese trading documents are not sufficiently digitalized to support B2B transactions.

Policy Agenda for East Asian Governments

- East Asian governments hoping to host foreign investments should
- Support provision of physical and institutional infrastructure to ensure that all enterprises are connected with international B2B e-commerce
- Support cultivation of technological and managerial capability in local firms
- Develop an environment of financial and quality transparency
- Ensure physical and institutional efficiency of infrastructure for international trade
- Develop IT human resources

Policy Agenda for the Japanese Government

- Facilitate corporate restructuring through deregulation, capital market development and regulatory reform
- Support development of telecommunication infrastructure in lagging East Asian economies lagging Internet penetration
- Promote B2B e-commerce standards developed by Japanese corporations

- Accelerate the opening of Japanese systems through foreign language training and attracting innovative foreign talents