An Approach to Global Business History: How the History of International Business Relations Has Shaped the Field

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Introduction

THE MOST VALUABLE ANALYTICAL APPROACH to understanding global economics today is to examine multinational enterprises (MNEs). MNEs expand business by increasing the movement of human resources, product and capital across national boundaries, resulting in closer economic ties between countries. Keywords such as mega-competition, borderless and flattened world all point to business becoming increasingly globalized. On the other hand, when we analyze the influence and activities of MNEs that are propelling globalization, nationality is still significant. According to Geoffrey Jones, the strategies and organizational structures of MNEs still reflect the characteristics of their respective home economies.¹ Observations of this kind emphasize national features in the development of businesses.² From the end of the nineteenth century, the course of globalization led by business, has demonstrated both global and national features. It is imperative that we examine these two features delineating the evolution of

1. Geoffrey Jones, *Multinationals and Global Capitalism: From the nineteenth to the twenty-first century* (Oxford: Oxford University Press, 2005), 253-254, 290.

2. Amatori and Colli also stress national differences in behavior and accomplishments of large corporations competing internationally. Franco Amatori and Andrea Colli, *Business History: Complexities and comparisons* (London and New York: Routledge, 2011).

business to understand globalization.

The history of MNEs is the principal academic field devoted to the study of the evolution of global business from a historical perspective. The work of Jones and Mira Wilkins is representative of this body of research.³ Wilkins clarified the history of American enterprises abroad by amassing and analyzing a prodigious array of documents related to direct overseas investments. Jones, too, focused on significance of direct investments abroad, bringing to light the historicity of global economics today. There have also been several conferences held by Business History Society of Japan such as the Fuji Conference that recognized the history of MNEs as an important theme.⁴

However, questions such why nationality is important and what kinds of differences arise with nationality have still not been adequately dealt with. Doubtless a corporation that develops its business across national borders does so with the intent of strengthening its global character. But does this mean that a completely national company can take on a global persona simply by moving across borders? Prior to becoming globalized, could an enterprise be seen as one purely shaped by national forces?

Such a national enterprise has, in fact, already been informed and developed as a global entity prior to investing abroad. The field of the history of international business relations (HIBR) focuses on the international moments in a company's development. It is not merely the study of MNEs, it is a discussion of how international business relations impacted management and left its mark on industrialization and management in countries such as Japan. This discussion further highlights conflicts between national and global influences. It raises questions as to why global enterprises retain a diversity of national traits in behavior and performance, no matter how world-wide their activities, and why they cannot easily divest themselves of those national traits. This paper attempts to clarify how globalization has developed from the perspective of HIBR as discussed in Japan.

3. Jones, *Multinationals and Global Capitalism*; Mira Wilkins, *The Emergence of Multinational Enterprise: American business abroad from the colonial era to 1914*. (Cambridge, MA: Harvard University Press, 1970); Mira Wilkins, *The Maturing of Multinational Enterprise* (Cambridge, MA: Harvard University Press, 1974).

4. Ōkōchi Akio and Inoue Tadakatsu, eds., *Overseas Business Activities* (Tokyo: University of Tokyo Press, 1984); Yuzawa Takeshi and Udagawa Masaru, eds., *Foreign Business in Japan before World War II* (Tokyo: University of Tokyo Press, 1990).

In the following paper, after reviewing the contributions on the international business history, I will concentrate on how Japanese enterprises developed from HIBR perspective. Specifically, I will attempt to shed light on an aspect of globalization through which international opportunities led to the global competitiveness of Japan's electrical and electronic industries today.

I. International Business History as Comparative Studies and Relational Studies

1. Beginnings of Business History in Japan

The study of business history in Japan was transplanted from the United States in the early 1960s.⁵ Following the establishment of Business History Society of Japan in 1964, the field developed in a relatively independent manner. One of the special features of the business history studies in Japan, from its inception, was a strong interest in comparative studies. With the 1964 Tokyo Olympics on the horizon, Japanese business accelerated its move toward internationalization. At the same time, “the awareness that Japan was behind in systems of business administration, and needed come up to international standards”⁶ pushed the research forward. Methodologically, comparative research flourished with the adoption of entrepreneurial history and its fascinating research into the social, cultural and historical backgrounds of entrepreneurs emerging in different countries.

At the outset, entrepreneurial history was central to comparative studies in business history with International Comparison of Entrepreneurship as the theme of the Fourth Annual Conference. However, by the mid-1970s onwards, the research had expanded to include comparisons of business systems. From 1974, prominent business historians were being invited to present at regularly held international conferences on business history such as the Fuji Conference. In Japan, the field was being pursued in such a way that studies were increasingly sophisticated by the mid-1980s.⁷

5. Keieishi gakkai [Business History Society of Japan], ed., *Keizaishigaku no nijūnen, kaiko to tembō* [Twenty years of business history studies: survey and retrospective] (Tokyo: University of Tokyo Press, 1985), 38-39.

6. *Ibid.*, 39.

7. *Ibid.*, 39.

2. Origin of international business relations (HIBR)

It was in such an environment that the history of international business relations (HIBR) was born. The field was based on an analytical model proposed by Nakagawa Keiichirō and was an attempt to understand business development from an international viewpoint. When Nakagawa analyzed the behavior of entrepreneurs, he observed that it was important to recognize “the fact, for example, that in the case of the process of industrialization, what had brought about the identifying characteristics of a nation’s capitalism were to be found not only in its internal conditions but rather in its international relations”.⁸ For example in order to understand the American industrial revolution, we need to know that from the beginning, Americans were forced to compete with products made in England. For this reason, they had to demonstrate a far superior level of technology and scale of business than England. The entrepreneurs who drove industrialization in America were not mid-level industrialists as in England but entrepreneurs who were formerly international traders. Nakagawa asserted that we can only understand the American industrial revolution by recognizing its roots in an international environment whereby competition with England’s industries was a reality.⁹ In other words, it is only through considering America’s international or competitive relationship with England that we can start to explain American industrialization. This idea, presented by Alexander Gerschenkron his analysis of economic backwardness, was developed by Nakagawa in business history.

Concurrent with Nakagawa, Yonekawa Shin’ichi also stressed the importance of international relations. Yonekawa based his research on contemporary enterprises, rather than those at the same stage of development. On this point, Yonekawa argues that while enterprises in all countries participate in the formation of the world market, their own futures are determined by market competition. They are mutually connected through the global market place and define one another’s organizational attributes. He demonstrated a viable basis for contemporary studies in comparative international studies.¹⁰

8. Nakagawa Keiichirō, *Hikaku keieishi josetsu* [An introduction to comparative business history] (Tokyo: University of Tokyo Press, 1981), 110.

9. *Ibid.*, 110.

10. Yonekawa Shin’ichi, “Hikaku keieishi e no dōtei” [Towards a comparative business

It is important to understand Nakagawa and Yonekawa's argument about international relationships as a multilayered image. On the macro level, international relationships can be understood as competitive relationships between the economies of one country and another. The national enterprises, and the behavior and performance of entrepreneurs of a given country are defined by the distinctive features of its national economy. And the special features of that national economy are further seen as being defined by its international relationships, as in the case of, for example, the economic relations between Japan and the U.S. or Germany. At the micro level, international relationships can be understood as competition between companies in a given country. Enterprises and entrepreneurs compete and cooperate with foreign companies in a global marketplace that includes their own domestic markets, the domestic markets of their foreign competitors, and yet a third market. It is the competition among companies that results in progress in business.

3. Development of HIBR

By the mid-1980s, the Japanese economy was recognized internationally, there is less interest in the earlier comparative studies and histories of foreign businesses. On the other hand, there is a slow but steady increase in studies in HIBR. This was due to the fact that international relationships have had an increasingly stronger impact on business. First of all, even companies operating only within Japan, were being shaped by the development of global capitalism through macro economic relationships as with the IMF and GATT. Therefore, it was essential to understand the influence of international relationships on companies to understand the development of Japanese enterprises. Secondly, although the influence is relatively lower than today, the behavior and performance of companies in many sectors such as the textile and automotive industries, are constantly being informed by their involvement in international competition through trade. Thirdly, after the advent of the high Yen resulting from the Plaza Accord of 1985, Japanese enterprises started in earnest to invest internationally so that global competition became a reality and their international management practices came to the attention of the global community.

At the same time, the accumulation of studies on HIBR were insufficient to invite debate on its methodology. Surveying research done in HIBR as a whole, there is no agreed upon understanding of central concepts such as the meaning of “international relation” nor indeed of the scope of HIBR. But, the studies can be divided into two types. The first, looks at HIBR by analyzing company histories. Much of this research discusses issues in common with theories of MNEs. The second, analyzes global competition and collaboration as the international opportunities for a company’s growth. Let us look at the features of both types of research.

4. Corporate history approach to HIBR

Takenaka Tōru studied the German conglomerate Siemens’ business practices in relation to Japan during the Meiji Period.¹¹ While Takenaka did not set out to create a framework for HIBR, through his research into primary sources related to Siemens’ business dealings with Japan, he was able to draw a concrete picture of the way Western businesses were expanding overseas at the end of the nineteenth century. His work made an important contribution to HIBR by establishing the notion that external business stimulus led to industrialization in Japan. Thus by analyzing how Siemens “had perceived the Japanese market of the time, the kind of strategy it brought into play, and the types of activities it initiated”¹² Takenaka was, in fact, taking the first company history perspective. As far as the second type of research is concerned, Takenaka looked into the kind of influence Siemens’ Japan strategy had on its industrialization. He found that although Siemens tried to avoid making its technology available to Japan, it did train the human resources necessary for post-Meiji industrialization. This was evident in the case of Noguchi Shitagau and Japan Nitrogenous Fertilizer Company which contributed to the progress of Japan’s industrialization. Slightly later in the Taishō Period, in 1923, the transfer and consolidation of technology necessary for the establishment of Fuji Electric is another example.

Kudō Akira’s *Japanese-German Business Relations*, published in 1992, “attempted to look at Japanese-German business relations from

11. Takeuchi Tōru, *Siemens to Meiji Nihon* [Siemens and Meiji Japan] (Hatano-shi: Tokai University Press, 1991).

12. *Ibid.*, 9.

the perspective of corporate history.”¹³ Placing it at the intersection of the business history, including corporate history, and the history of international relations was a fresh approach.¹⁴ Kudō criticized the practice of emphasizing only direct investments in the history of MNEs and asserted that it was essential to understand international business relations on a three-point analysis of exports, direct investments, and licensing. He analyzed the way the C. Illies & Co., Fried. Krupp AG, I. G. Farbenindustrie, Ostasiatische Lurgi-GmbH and Siemens conducted their business with Japan. Through these studies, he clarified an aspect of the relationship between German and Japanese enterprises that could not be ignored. That is, the extent to which German technology and management influenced the development of industrialization and management in Japan.¹⁵

In the history of business relations between two countries, studies that adopt the history of corporations approach include studies between Japan and Germany, but also between Japan and England. Nagura Bunji analyzed the relationship between English arms companies, Armstrong and Vickers, and Japan Steel Works and described those types of the relationships between Japan and England.¹⁶ In order to understand the relationship between the respective naval armaments industries, Nagura described the relationships between the individual enterprises. He uncovered the role of English stock holders in the development and establishment of Japan Steel Works. He closely analyzed active stock holder involvement tracing the nature of that involvement from decisions around investments and technical assistance, subsequent weakening of relationships, revival of the involvement, and withdrawal or the selling off shares.

Yamauchi Masato's research led to an analysis of English enterprises dealing with Japan, such M. Samuel & Co. and Royal Dutch (later known as the Shell Group), Babcock and Wilcox, Dunlop, and Lever Bros.¹⁷

13. Kudō Akira, *Nichi Doku kigyō kankeishi* [A history of Japanese-German business relations] (Tokyo: Yuhikaku, 1992).

14. Ibid., 4.

15. Ibid., 3-5.

16. Nagura Bunji, *Heiki tekkō gaisha no Nichi-Ei kankeishi – Nihon seikōjo to Eikoku gawa kabunushi* [A history of iron and steel weapons companies and Japanese-English relations, Japan Steel Works and English stock holders 1907-52] (Tokyo: Nihon Keizai Hyouronsha, 1998).

17. Yamauchi Masato, *Nichi-Ei kankei keieishi – Eikoku kigyō no genchi keiei to*

Yamauchi looked at aims the English firms had as they expanded into Japan, how their Japanese subsidiaries developed their business and where their successes and failures lay. He especially focused on how they built their networks with the local organizations and businesses in their host country. Yamauchi's research contributes to HIBR through corporate histories.

Representative studies described above have in common the question of the influence these global enterprises exerted on Japanese industrialization. This is similar to the idea that MNEs operated as engines of growth facilitating the movement of resource bundles across borders much as in theories of MNEs. By examining international relationships between enterprises, it was possible clarify the way in which relationships developed between national economies on the macro level. Therefore, this approach may be regarded as a "business history for international relations".

Corporate management in each country is influenced by its economy, society, culture, and the characteristics of its national economy, and these national economies are, in turn, affected by their international business relations. Research on international relations from a corporate history perspective is obviously linked to the analysis of international opportunities in business development. It is thus worthwhile clarifying how corporate management influenced international relations. In the final analysis, however, much of the work covered by "business history for international relations" is absorbed by MNEs theories, and as the field of HIBR hardly provides the understanding of globalization with unique viewpoint.

5. Research on company growth and international opportunities

However, original contributions by HIBR have been made in another research direction, that is, the role of international opportunities in corporate growth.

In his study of the establishment of Fuji Electric, a joint venture of Siemens and Furukawa *zaibatsu* (powerful pre-war combines), Watanabe Hisashi discovered that Siemens' bold steps were motivated

network keisei [History of Japanese-English business relations, English companies in Japan and their networking] (Hiroshima: Keisuishsha, 2010).

by top management's concerns over international competition.¹⁸ After the First World War, Siemens, in particular Hermann Keßler, sensed the approach of a grave crisis and feared losing its competitive edge given its overwhelming disadvantage in the face of American and British capital. It was this sense of crisis that forced Siemens to place importance on the East Asian market.¹⁹ Watanabe made it plain that the direction of corporate strategy and development was determined by international competition. By establishing the connection between corporate growth and international opportunities or triggers, Watanabe made an original contribution to HIBR.

While Kudō's previously mentioned *Japanese-German Business Relations* looks at Japanese-German relations from a corporate history perspective, his *IG Farben's Japan Strategy*, is clearly a study on corporate growth and the role of international opportunities.²⁰ This builds on Alfred Chandler's theoretical model in which he proposes that the environmental elements determining business strategy must be expanded to include international connections. Kudō aimed to construct a HIBR that "analyzes the historical inter-firm relations within the context international relations."²¹ He also revealed the role of foreign corporations by looking into the German firm, IG Farben's Japan strategy and its impact on the growth of Japan's heavy and chemical industry. Kudō describes two meanings ascribed to the field of HIBR. The first, analyzes the decision-making core in management under the influence of international relations. It describes how top management perceives the international competition and how it builds its strategy and organizational structure accordingly. In his book, he uncovers how IG Farben built its Japan strategy and organizational structure²² based on its understanding of Japanese markets and companies. The second, analyzes the kind of impact management

18. Watanabe Hisashi, "Fuji Denki seiritsu katei no shironteki bunseki" [A tentative analysis of the establishment of Fuji Electric], in *Kigyōsha katsudō no shiteki kenkyū* [A historical studies of entrepreneurs], eds. Tsuchiya Moriaki and Morikawa Hidemasa (Tokyo: Nihon Keizai Shimbunsha, 1981).

19. Ibid., 216.

20. Kudō Akira, *IG Farben no tai-nichi senryaku – senkanki Nichi-Doku kigyo kankeishi* [IG Farben's Japan strategy, history of Japanese-German business relations in the inter-war period] (Tokyo: University of Tokyo Press, 1992)

21. Ibid., 2.

22. Ibid., 1.

core's decisions have on business development and what it meant to the region and to the company's market. Kudō made the consequences of technology transfer and management transfer his main themes. However, he also included the influence on the receiving country, a point which has much in common with studies of MNEs. Looking at meanings by analyzing company growth, can then be considered the gist of HIBR.

A study in HIBR edited by Shiomi Haruhito and Hori Ichirō clearly delineates the inter-firm relationship as one of competition and rivalry.²³ According to Shiomi, their study established “the place of Japanese-American inter-company relations within the long-term developments in industry”²⁴ and uncovered the mechanisms whereby Japanese and American corporations competed, collaborated and took their place in the global market, as they acted and reacted to the internationalization of Japanese business in the 1980s. According to Shiomi, Chandler's model did not include “the international business history framework wherein responses to internationalization were instrumental in the formation of a company's strategy and organizational structure”²⁵ and was insufficient as a means of looking at the development of corporations in global terms. In response, they considered the Americanization of Japanese companies and the Japanization of American companies in the 1980s resulting from the enterprises of both countries acting on one another and being mutually transformed through the medium of international competition. They wrote up case studies describing the competitive relationships between companies such as US Steel and Nippon Steel, GM and Toyota, GE and Toshiba (electrical industry), Exxon and Mobile and Tōnen General and Idemitsu, Dupont and Mitsubishi Chemicals, Boeing and Mitsubishi Heavy Industries (aerospace industry), IBM and Fujitsu (computer industry), Intel and NEC (semiconductor industry), AT&T and NTT (telecommunications industry), Seven Eleven of each country, and Merrill Lynch and Nomura Securities (finance and brokerage firms). Although Shiomi and Hori's work is limited to Japanese-American relations, it represents a milestone in HIBR because of its comprehensiveness and because it succeeded in

23. Shiomi Haruhito and Hori Ichirō, eds., *Nichi-Bei kankei keieishi – kōdoseichō kara genzai made* [History of Japanese-American business relations, from the era of high economic growth to the present] (Nagoya: The University of Nagoya Press, 1998)

24. *Ibid.*, 1.

25. *Ibid.*, 10.

clearly establishing the extent to which this specific relationship between the two countries served as a catalyst for business.

HIBR further serves as a effective starting point for the applied business history which surveys solutions to problems facing management in the global age. In his analysis of the Japanese oil industry, Kikkawa Takeo suggests that a historic dynamism perspective is needed to overcome its challenges.²⁶ He suggests that the vulnerability of the Japanese oil industry is due to the separation of departments upstream and downstream and that there are too many small-scale oil companies. It was clear to him that this type of industry was formed and established by the international competitive environment. Namely, foreign oil companies occupied a large share of the pre-war oil market in Japan so that in order to compete with them, Japanese companies had to import crude and sell refined oil. This was the beginning of the separation of upstream and downstream. This became the norm with post-WW II partnerships and the heavy reliance on international oil capital.²⁷ According to Kikkawa, the main reason why national flag oil companies were not established in Japan is because they were in an international oil competition. The structure of the oil industry and its international business interactions were clarified in this study, which is representative of HIBR.

II. Research in Japanese electrical companies

1. National imprints

The two approaches to HIBR described above each have to be identified and analyzed according to the mutually formative influences between company development and international competition. Within that mutuality, the analytical framework of HIBR emphasizing activity of enterprises and analyzing company development and international opportunities sheds light on global economics today and how MNEs should operate in a global marketplace. Even with the onward movement of globalization, only companies originating in certain countries are able to compete. This is because such companies are being shaped by competitive

26. Kikkawa Takeo, *Nihon sekiyu sangyō no kyōsōryoku kōchiku* [The building of competitiveness in the Japanese oil industry] (Nagoya: The University of Nagoya Press, 2012).

27. *Ibid.*, 8.

and organizational structures, resulting in the creation of specific types of business growth. An approach that examines the evolution of global business uses the HIBR framework and analyzes national characteristics imprinted on the players together with global influences.

Let us examine the Japanese electrical and electronics industry. From World War II to the 1990s, companies in this sector were highly competitive in Japan and in the world market but today they struggle under the weight of global competition. One reason for this can be found in Japan's specific technological innovation.²⁸

Abernathy and Clark categorized four types of innovation in the technological revolution:²⁹ *architectural innovation* that destroys existing technology and opens up new markets with new technological systems; *revolutionary innovation* that destroys existing technology and digs deeper into the existing market through new technological systems; *niche creation* that builds on existing technology while opening up completely new markets; and *regular innovation* that also improves existing technology and digs deeper into the existing market. Of the four categories, growth in Japanese companies can be said to have come about through *niche creation* and *regular innovation*.

The reason why R&D in Japanese electrical and electronic industries is characterized as niche creation and regular innovation is because there is a history of building their businesses by taking specific positions in competitive global market. Electrical technology had developed rapidly in Europe and America from the end of the nineteenth century, and international trade ensued rather quickly. American and European electrical companies became large international enterprises not only by accelerating their technological development but applying the patent system to their technology. It was against this background that Japanese electrical and electronic companies found they had to learn quickly by adopting technology that was already established in the U.S. and Europe,

28. This refers to the Galapagos Syndrome or galapagosization of Japanese technology. It occurs when technologies or products are developed with a specific market, in particular, the home market, in mind. The result is an inability to compete globally. A case in point is the mobile phone market in Japan. Before Apple's iPhone swept the Japanese market, Docomo had already developed mobile phones with internet (iMode) and electronic payment functions.

29. William J. Abernathy and Kim B. Clark, "Innovation: Mapping the winds of creative destruction," *Research Policy* 14 (1985): 3-22.

and then almost concurrently digested and absorbed new technologies. With their relatively low level of technology, Japanese companies entered into capital and technical agreements with Europe and the U.S. companies and consistently introduced new technologies as well as having been in partial charge of the western companies' global R&D systems. This was an effective way of raising their R&D organizational capabilities. Thus, from the end of the nineteenth century to the 1920s, Japan's major electrical and electronic companies were able to continually adopt foreign technology and consolidate research systems and technology from the West by making capital and technical agreements with foreign firms.

Next, let us look at how Tokyo Electric and Shibaura Engineering Works (the latter two merged in 1939 to become Tokyo Shibaura Electric), and Mitsubishi Electric dealt with global competition.³⁰

2. Confronting global competition

Tokyo Electric

Tokyo Electric's origins can be traced back to 1890 and a limited partnership company Hakunetsusha established by Fujioka Ichisuke, a professor at the Imperial College of Engineering, and Miyoshi Shōichi, a manufacturer of electrical components. When Hakunetsusha was established, all the incandescent light bulbs used in Japan were imported. Fujioka wanted to manufacture domestic light bulbs and commenced production. Hakunetsusha became a joint-stock corporation and became known as Tokyo Electric on January 1899.³¹

The greatest technical problem Tokyo Electric had in its earliest days was producing light bulbs that could compete with the imports. Fujioka together with Shinjō Yoshio who joined the firm in 1899 experimented on the production of improved light bulbs. The company set up its own laboratory the same year. In that laboratory, Fujioka and Shinjō not only worked to improve the standard light bulb but to develop a new light bulb. The result was the reflector light bulb, the Fujioka adjustable bulb, and the

30. Miyamoto Matao, Okabe Keishi and Hirano Kyōbei, eds., *Ichī kara no keieishi* [The 1st step of business history] (Tsu-shi: Sekigakusha, 2014), 10-19 (I have drawn from this source for information on these three companies, together with my own additions and changes.)

31. Yasui Shōtarō, ed., *Tōkyō Denki kabushiki kaisha gojūnen-shi* [Fifty-year history of Tokyo Electric] (Kawasaki: Tokyo Shibaura Electric, 1940), 6.

color light bulb which Tokyo Electric sold at that time.³²

It proved extremely difficult for Tokyo Electric to produce incandescent bulbs (carbon light bulbs) domestically at that time. The speed of light bulb technology advances was such that even as Tokyo Electric was struggling with Edison's light bulb, Europeans and Americans were already developing its replacement with the tungsten light bulb. In order to quickly bridge the technology gap in the production of domestic light bulbs, Tokyo Electric made an agreement with GE for a capital investment and technology tie-up, marking the beginning of technology transfer.

With this technology transfer agreement, GE's investment in Tokyo Electric allowed it to retain 51% of its stock, virtually making it a Far Eastern manufacturing subsidiary of GE. Tokyo Electric not only acquired GE's light bulb technology licensing but its manufacturing machinery and facilities. Technicians were sent from the US to serve as instructors in the installation and operation of the new technology. The agreement also stipulated that Tokyo Electric's engineers could visit GE America's factories and research centers for technical training.³³ Through such channels, technology for producing tungsten, gas-filled light bulbs and other light bulb technology, originally developed in the United States, was transferred to Tokyo Electric in close to real time, putting its business on an "unshakable foundation."³⁴

Following its technical tie-up with GE in 1905, Tokyo Electric did more than manufacture the incandescent light bulbs made possible by the American company's technology and facilities. The company gradually and systematically started to developing its own technology. Fujioka and Shinjō, Japan's early electrical experts, took the initiative to carry out their own research in the very laboratory that was set up for light bulb experiments in 1899. However, in 1912, the company decided to take over the research. That year, a laboratory was set up in the engineering department, and the following year, it became the science laboratory with about ten engineers assigned to it. This laboratory was assigned to work

32. Ibid., 64-65.

33. Ibid., 99, 113-114; Uchida Hoshimi, "Western Big Business and the Adoption of New Technology in Japan: The electrical equipment and chemical industries 1890-1920," in *Development and Diffusion of Technology: Electrical and Chemical Industries*, eds. Ōkōchi Akio and Uchida Hoshimi (Tokyo: University of Tokyo Press, 1980), 155-157.

34. Ibid., 124.

on projects from the engineering department, models sent from GE, and to research domestic production of materials needed for light bulbs.³⁵

With the arrival of Yamaguchi Kisaburō, organizational capability for R&D leapt forward. Formerly executive managing director for Furukawa Kōgyō, he became director at Tokyo Electric from 1918. In 1921 he served as senior executive managing director and vice-president, and in 1927 became the company's president. Yamaguchi's ideas on the introduction of new technology and development were as follows. "Japanese industry must develop as quickly as possible so that it can stand shoulder to shoulder with first-rate industrialized nations in the West. In order to do this, it must borrow the strengths of foreign countries. We can't stubbornly insist on doing it ourselves. Whether it be in the area of technology or management, the fastest way is to obtain the valuable fruit that took other countries many years of effort."³⁶ In other words, the idea was to energetically absorb the superior foreign technology. Another was "that bringing together research on a product and its factory production determines the financial success of a manufacturing company". By insisting that "Japanese researchers had to be educated and that the Japanese themselves had to raise their level of industrial technology,"³⁷ Yamaguchi expanded the organizational structure of Tokyo Electric's technical development.

In October 1914, the physics and chemistry laboratory, formerly under the technology department, was transferred to the engineering department. All theoretical research and technical development, not only on light bulbs and their production, but on fireproof products, X-Ray dry bulbs, optical glass and vacuum tubes were to be carried out there. Then, in August 1918, Yamaguchi made the laboratory an independent research institute, to be directly under the control of the executive director. In the beginning, the research institute was divided into two sections: research in physics and in chemistry. There were five laboratories in the physics section specializing in physics, light bulb technology, illumination, long-life luminosity and X-ray technology. The chemistry section consisted of laboratories specializing in metallic tungsten, chemical products, and the production of hydrogen, oxygen, nitrogen and argon gas. Together the physics and

35. Ibid., 523.

36. Yamaguchi Kisaburō Den Hensan Iinkai, *Yamaguchi Kisaburō den* [Biography of Yamaguchi Kisaburō] (Kawasaki: Tokyo Shibaura Electric, 1950), 45.

37. Ibid., 46.

chemistry sections had a total of 17 laboratories, and until the Great Kanto Earthquake of 1923, had approximately 40 scientists on staff.³⁸

Shibaura Engineering Works

Shibaura Engineering Works owes its beginnings to the Tanaka Engineering Works established by Tanaka Hisashige in 1875. Primarily the provider of telegraphic equipment to the Imperial Japanese Navy and the Ministry of Communications, Tanaka Engineering Works found itself in financial difficulties when the Navy drastically cut orders to public suppliers with the expansion of the Yokosuka Shipyard. By 1893, the company was bankrupt and taken over by Mitsui. Subsequently renamed Shibaura Engineering Works, Mitsui placed the firm under the direction of Fujiyama Raita of Mitsui Bank. Production of electrical machines commenced but the company was unable to recover financially.³⁹

In 1899, the appointment of Ōtaguro Jūgorō saw a management renewal at Shibaura. Ōtaguro restored order to a disorganized company, and in August 1900, made major personnel changes. The machinery department was to be headed up by Nishizaki Den'ichirō, electricity by Kishi Keijirō, and factory supervision by Kobayashi Sakutarō. Through an organizational revolution, Shibaura's goal was to inject new energy into electrical machinery production. With the appointment of Kishi, the promising young technician as head of electricity, Shibaura's prospects took a decided turn for the better. By 1904 the company was released from Mitsui and incorporated a Shibaura Engineering Works Limited.⁴⁰ That same year, senior executive Ōtaguro sent Kishi and Kobayashi to the United States to inspect electrical business and electrical machinery production. On their return, the two men expanded factories, and started up hydroelectric projects which proved profitable after the Russo-Japanese War, further enlarging Shibaura's business.⁴¹

Technological advances made under Kishi at Shibaura were by no means modest. Ōtaguro, however, was not satisfied. Noting the startling

38. Yasui, *Tokyo Denki kabushiki kaisha gojūnen-shi* [Fifty-year history of Tokyo Electric], 524-525, 540.

39. Kimura Yasuichi, ed., *Shibaura seisakujo rokujūgonen-shi* [Sixty-five-year history of Shibaura Engineering Works] (Kawasaki: Tokyo Shibaura Electric, 1940), 11-23.

40. *Ibid.*, 37-44.

41. *Ibid.*, 48-52.

advancements in the production of electrical equipment in Europe and America, he observed that, “Japan had made much progress in developing its technology, sending personnel overseas and raising a succession of extremely capable individuals, but our situation can’t be mentioned in the same breath as that of the West.”⁴² He came to the conclusion that “Japan’s manufacturing technology has to adopt special means to bring its research up to international levels. In short, we have to bring together our thinking with their thinking.”⁴³ Through the good offices of Masuda Takashi at Mitsui, Shibaura concluded an agreement that would bring in GE investment and technological know-how. GE would obtain 34% of Shibaura’s stock value, and in return, Shibaura Engineering Works would acquire GE licensing rights, research reports and technical reports, including blue prints. Shibaura’s engineers would be able to study in GE factories and GE would send its engineers to Japan to provide factory construction plans and management advice.⁴⁴

With the introduction and absorption of GE technology, Shibaura Engineering Works was able to create the organizational structure for its technical development. By 1906, it established a research laboratory in inspection section. This laboratory underwent performance tests of products from factories, and albeit on a modest scale, could investigate raw materials for new products. With its relatively high level technical expertise, it produced the “special high voltage Shibaura electrical insulator” and other products. In 1915 the laboratory was charged with developing engineering works, placed directly under the head of the executive director of technology, and in 1931 became a research institute.⁴⁵

Mitsubishi Electric

Mitsubishi Electric, together with Shibaura, became a major player in the manufacture of heavy electrical equipment. It was known as Mitsubishi Shipbuilding Electrical Works, and in 1921, became Mitsubishi Electric Corporation, a joint-stock company. From the outset, it mainly

42. Ibid., 53.

43. Ibid., 53.

44. Uchida, “Western Big Business and the Adoption of New Technology in Japan”, 154.

45. Kimura, *Shibaura Seisakusho rokujūgonen-shi* [Sixty-five-year history of Shibaura Engineering Works], 293-296.

manufactured electrical machinery for electrical equipment, railways, ships, mining, iron manufacturing, elevators, fans and refrigerators and freezers. In 1919, when Mitsubishi had separated the electrical factory from its Kobe Shipyard and created an independent entity, Mitsubishi Shipbuilding Electrical Works, the new factory was set up with its own research division and its researchers mandated with developing everything from electric fans to electrical motors for submarines.⁴⁶ Thus, technological development was being actively pursued even before Mitsubishi Electric was established as a joint-stock company.

While Mitsubishi Electric was being established, Shibaura Engineering Works with its GE connection and long history and advanced technology was already a well-established competitor, in the Japanese electrical machinery market. In order to compete with such a large enterprise, it became imperative for Mitsubishi Electric to advance its technology by collaborating with a foreign company with a high level of technology. After looking through its options, Mitsubishi Electric decided to sign an agreement that would bring in investment and technology transfer from Westinghouse Electric and Manufacturing Company. The agreement also included technological assistance from Westinghouse Air Brake Company. This agreement excluded light bulbs and radio equipment but covered licensing and information on technical advancements for electrical machinery and railroad technology that was transferred on an ongoing basis.⁴⁷

Mitsubishi Electric's R&D activities also made improvements in its organizational structure. A research department was established at its head office in 1924. The department was to work on the patents and technology from Westinghouse. As they studied the Westinghouse's technology and applied it to their own products, they became increasingly aware of the importance of the materials required which led them to embark on basic research on materials. They also produced new products such as the Mitsubishi motors for trains based on their own technology. With these developments, a construction research division was established within the Kobe Construction Division in 1926 enabling research on materials and construction to progress systematically. By 1935, it became the main

46. Mitsubishi Electric Corporation, *Kengyō kaiko* [Business retrospective] (Tokyo: Mitsubishi Electric, 1951), 45-48.

47. *Ibid.*, 67.

research division with a division head, eight engineers, and an assistant engineer. In 1940, it was made a research department, and in 1944, a research institute. Around this time, Mitsubishi was not only working on heavy electrical equipment and the materials required for their production but conducting research on vacuum tubes and wireless radios.⁴⁸

We have thus seen that as Tokyo Electric, Shibaura Engineering Works and Mitsubishi Electric acquired their technology through tie ups with foreign companies, they absorbed that technology and on that foundation, developed their own. They built up their organizational capability for R&D accordingly. In other words, the research capacity of Japanese firms developed as they grew to be like foreign affiliated companies. The organizational capability for niche creation innovation and regular innovation in the Japanese electric and electronics industries has remained fundamentally unchanged to this day. Japan brought in post-war American and European technology and developed their own technology and products. As the country strengthened its position, it arrived at the period of high economic growth only to find itself struggling in the face of a new chapter in global competition.

Conclusion

This paper analyses the international opportunities that exerted a formative influence on the development of business and management as analyzed through the many studies in HIBR in Japan. This type of analytical framework is useful in understanding globalization today when companies constantly cross borders in pursuit of business. While Japanese, American, EU and Chinese markets all have global markets with global enterprises engaged in rivalry and competition, the companies also retain their own specific national characteristics. Conditions determining markets and competition have become globalized and flattened but the players themselves remain diverse. Global enterprises emerging from different countries were formed by various domestic and international relationships or global influences. It is not easy for companies to avoid such influences. A look at Japan's electrical and electronic companies makes this abundantly clear.

The advance of globalization also presents new issues for those

48. Ibid., 81-82, 355-358.

working within the analytical framework of HIBR. The field was formerly concerned with the kinds of formative influences experienced by relations between two countries, mainly between Japanese companies and their German, British or American counterparts. Now, companies are not only simultaneously being influenced by multiple international relationships, but impacted by a global market place and global players of more nationalities. The international opportunities shaping business and management have become far more complex than at the end of the nineteenth century or the latter half of the twentieth century. Business history will have to examine and broaden its analytical framework in order to track Japanese, American and European businesses and see how they fare in this new era of global competition.

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