Chapter 2
Boundaries of Innovation and Social Consensus Building: Challenges for Japanese Firms

Akira Takeishi and Tsuyoshi Numagami

Abstract This paper addresses challenges for Japanese firms in innovation, drawing on a framework to categorize innovation by its boundary and our understanding of organizational characteristics of Japanese corporate systems. Innovation can be categorized into four levels by its boundary, that is, the scope of changes to be involved. Four levels are of innovation within component, innovation between components (within product), innovation between products (within market), and innovation between markets (within institution). When the boundary of innovation is limited, necessary coordination could be made within a small group of people. Japanese firms are more likely to succeed in such innovations, since they have advantage in frontline-led consensus building based on long-term employment and inter-firm relations. Once the boundary of innovation exceeds such limited scope, particularly across two or more different markets, however, political reconciliation of different interests or charismatic leadership is necessary to build a consensus among heterogeneous social actors.

2.1 Introduction

This paper addresses challenges for Japanese firms in innovation. Our discussion is based mainly on two intellectual bases: (1) an analytical framework for categorizing innovation, which we construct as an extension of previous research, and (2) our understanding of the organizational characteristics of Japanese corporate systems in context of innovation. In order to discuss the latter, we refer to some of our research studies conducted under the twenty-first century COE program “Dynamics of Knowledge, Corporate System and Innovation” at Hitotsubashi University. By

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linking these two bases, this paper explores what type(s) of innovation Japanese firms are not good at and why they are so.

Our conclusion can be summarized as follows. Innovation can be categorized into four levels by its boundary, that is, the scope of changes to be involved. Four levels are of innovation within component, innovation between components (within product), innovation between products (within market), and innovation between markets (within institution). When the boundary of innovation is limited, necessary coordination could be made within a small group of people. Japanese firms are more likely to succeed in such innovations, since they have advantage in frontline-led consensus building based on long-term employment and inter-firm relations. Japanese firms have obtained success thus far by pursuing innovations of relatively limited scope within markets established by Western counterparts who have achieved broader innovations.

Once the boundary of innovation exceeds such limited scope, particularly across two or more different markets, however, political reconciliation of different interests, charismatic leadership, and/or another market process that operates between markets is necessary to build a consensus among heterogeneous social actors. Now that Japanese firms have moved into the forefront of technology development, they need to be engaged in broader innovations. Yet their organizational behavior does not necessarily work well to achieve such innovations.

2.2 Types of Innovation by Boundary

2.2.1 Boundaries of Innovation: Four Levels

Schumpeter provided two conflicting arguments on who would carry out innovations. One emphasized entrepreneurs (Schumpeter, 1934), and the other established large firms (Schumpeter, 1942). Each argument had its own plausible explanation. Stimulated by this intriguing and crucial contradiction, many studies on innovation have explored what impact innovation has on competition and who carries out innovations.

For those investigations some scholars tried to categorize innovation, believing that who innovates and what would happen as a result differ by the type of innovation in question. Representative work include Tushman and Anderson (1986), Abernathy and Clark (1985), Henderson and Clark (1990), and Christensen and Bower (1996). These scholars defined different types of innovation and showed some mechanisms why incumbent firms failed to respond to certain types of innovation.

Following suit, we draw on and extend the analytical framework introduced by Henderson and Clark (1990). They divided innovation into two types (Fig. 2.1), innovation within component and innovation of linkages between components and argued that established firms’ behavior would vary by the type of innovation. Established firms would often hesitate to adapt to architectural innovation, in which
Fig. 2.1 Types of innovation by Henderson and Clark (1990): Innovations within and between components

Linkages between components (or product architecture) change while the components themselves remain unchanged. Because architectural innovation involves changes in communication channels, information filters and problem-solving strategies embedded in the established organization, it is difficult for incumbent firms to recognize such changes and correct their behavior. The semiconductor photolithographic alignment equipment industry served as an empirical evidence to support their argument.

We extend this framework. If further generalized, the types introduced by Henderson and Clark (1990) can be paraphrased as “innovation within the same element” and “innovation between different elements” (See Fig. 2.2). In Henderson

<table>
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<tr>
<th>Innovation within component</th>
<th>unchanged</th>
<th>incremental innovation</th>
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<td>changed</td>
<td>modular innovation</td>
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Fig. 2.2 Types of innovation: Innovations within and between elements
and Clark’s (1990) setting, components making up a product were fundamental elements and innovation was analyzed based on this dichotomy of “innovation within an element (components)” and “innovation between different elements (of linkages between components).” These two levels of innovation, however, comprise only part of a wide range of innovations in which firms are involved.

Any system existing in society has a hierarchical structure with multiple layers, in which one layer is included in another, larger layer (Simon, 1996). Elements to be analyzed should not necessarily be limited to components. The analytical framework of innovation within the same element and innovation between different elements can be extended to more superordinate levels such as those having products and markets as elements. This is what we propose.

We contend that there are four levels to categorize innovation by its boundary, although further subdivision would be possible (See Table 2.1). If the first level is innovation within a component, the second level is that of relationships between

<table>
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<th>Examples of innovation between elements</th>
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<tr>
<td>1 Within a component</td>
<td>Transistorized radios</td>
<td></td>
<td>Component manager (engineers)</td>
</tr>
<tr>
<td>2 Between components (within a product)</td>
<td>Walkmans, cross-functional teams (HWPM), proximity aligner (architectural innovation), Shimano’s integration of bicycle parts</td>
<td>Product development organizations, architectures/power of modularity</td>
<td>Product manager (PM), multiple component managers</td>
</tr>
<tr>
<td>3 Between products (within a market)</td>
<td>The Walkman series, IBM360, GM’s innovation by Sloan, Toyota’s development centers</td>
<td>Architectures/power of modularity, multi-projects, mass customization</td>
<td>Business manager, multiple product managers</td>
</tr>
<tr>
<td>4 Between markets (within an institution)</td>
<td>LP records, iPod/iPhone, iMode, RCA’s establishment of NBC, Sony’s VCR and CD, Intel &amp; Microsoft’s P/F leadership, global standardization of containers</td>
<td>Platform leadership, institutional entrepreneurs, emergence of industry, business eco-systems</td>
<td>Business architect, institutional entrepreneur, multiple business managers, public sector agencies</td>
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Table 2.1 Boundaries of innovation: Four levels
components. This is, in other words, innovation within a product. The third level then is of relationships between products. Assuming a market is comprised of a group of products competing directly with each other to meet the same needs of the same group of customers, innovation of relationships between products can be regarded as innovation within the same market. Therefore the third level is innovation within a market. The fourth level is of relationships between different markets. It entails innovation extending across different markets. Such innovation could change the relationship between different markets, integrate some different markets into one, or divide one market into several mutually independent markets. Since the relationships between different markets are governed by the relevant institution, the fourth level is innovation within an institution.

To understand our categorization of innovations, let us relate some existing analytical tools and perspectives of innovation management to the four levels and give some examples. As already mentioned, Henderson and Clark’s (1990) component innovation and architectural innovation deal with the first and second levels of innovation respectively. A proximity aligner introduced by Canon (Henderson & Clark, 1990), and system component innovations introduced by Shimano, a bicycle component manufacturer (Takeishi & Aoshima, 2006), are examples of the second level innovation. Canon and Shimano changed relationships between components to achieve better performance of aligners and bicycles. Also, Heavy Weight Product Managers for effective product development in the automotive industry (Cark & Fujimoto, 1991) is an organizational practice to succeed in the second level innovation.

Power of modularity (Boldwin & Clark, 2000), mass customization (Pine, 1993), and multi project management (Cusumano & Nobeoka, 1998) all deal with how to manage multiple products as a whole, which is about the third-level innovation. In this regards, IBM 360 (Baldwin & Clark, 2000) and Sony Walkman series (Sanderson & Uzumeri, 1995) are examples in which firms succeeded with innovation between products.

The creation of a new industry often involves innovation at the fourth level, that is innovation between markets. A new industry needs legitimizing and supporting the industry’s domains in relation to other industrial, social, and political systems (Van de Ven & Garud, 1989). Institutional entrepreneurship (Fligstein, 2001), platform leadership (Gawer & Cusumano, 2002), and business ecosystem (Iansiti & Levien, 2004; Moore, 1993) also deal with this level of innovation, since they all address how to manage coordination across multiple businesses, industries, and markets.

Taking music players as an example to illustrate these four levels of innovation, transistorized radio was an innovation within a component (downsizing by new components) and Walkman was an innovation of linkages between components (downsizing based on existing components). The Walkman series was an innovation of linkages between different products. LP records and iPod/iPhone were innovations between different markets. The former changed the relationship between record player market and the record market, and the latter changed the relationship between portable digital music player market, the music distribution market, the
broadcasting market, and, more recently the mobile telecommunication service market.

It is possible to further subdivide or integrate these four levels. For example, innovations between different markets include those changing the relationship between functionally independent markets and those changing the relationship between geographically independent markets. The containerization of shipping and transport services involved both the former (integration of marine transport, trucking and railway transport) and the latter (international standardization of containers). Also, in some cases, one innovation extends across two or more levels. GM’s innovation led by Alfred Sloan was an innovation across different product lines (characterized by the use of the same platform and engine for different product lines) as well as an innovation between different markets (of brand new cars, used cars, car loans and repair parts which were linked together by introducing regular model changes). The development of an image-processing device to be utilizable for both DVDs and digital cameras is an innovation within components as well as an innovation between different markets.

We therefore need a more complex framework of innovation types to describe individual cases better. The four levels nevertheless could serve as a parsimonious yet valuable viewpoint to distinguish different types of innovation in a stylized manner.

One benefit of the framework is to help us understand that innovations at different levels interrelate with each other (for example, a firm good at innovations at a certain level is likely to face difficulty as a result of an innovation at a different level achieved by its competitor) and that a certain type of innovation extending across two or more levels has a particular impact. Another benefit is that it would help us understand different characteristics of innovations at different levels that are otherwise invisible.

### 2.2.2 Determinants of Innovation

The categorization of innovation into four levels suggests that the factors making or breaking the success of any particular innovation differ from level to level. The higher level an innovation belongs to and the more its boundary is expanded, the more diversified and heterogeneous relevant actors and factors are likely to be involved as determinants of success/failure, directions, and timing of innovation.

Factors affecting the outcome of innovation include technological, economic, organizational, political, and social. As the level of an innovation moves higher, the influence of organizational, political, and social factors would become stronger. Henderson and Clark (1990) pointed out that innovation at the second level is more susceptible to organizational factors than innovation at the first level. Since various specialists and functional organizations are involved in innovation of linkages between components, organizational factors would play more significant roles compared to innovation within components.
In a similar vein, the influence of organizational, political, and social factors should be much greater at higher levels. Tushman and Rosenkopf (1992) argued that as the products become more complex, from non-assembled products, simple assembled products, through closed system, to open systems, the relative importance of sociopolitical factors in shaping technological progress rises. Open systems involve multiple closed systems, multiple practitioner communities, and networks of organizations. As technology rarely provides optimal choices and much uncertainty prevails, the choice from among a feasible set of technical options is driven by sociopolitical processes between organizations, technical practitioners, governmental units and communities. Although our categorization of innovations is somewhat different from their typology of products, we agree with Tushman and Rosenkopf (1992) that innovations at higher levels are more likely to be influenced by sociopolitical factors (Fig. 2.3).

These four levels – of components, products (relationship between components), markets (relationship between products) and institutions (relationship between markets) – are consecutive on a conceptual basis. Yet there exists a qualitative gap between the third and fourth levels, that is, between “innovation within a market” and “innovation between different markets.”

The success of the former depends basically on competition in a specific market. If the technological and economic features of a product or those of a group of products are better than other products or other groups of products, the chances of their success in the market are high. Competition within the market determines the consequence. Of course, social and political factors could have a considerable influence on an innovation even at this level, for example, when the features asked for by consumers as well as criteria to evaluate them are not yet well-defined.
because the market in question has not yet fully established itself (Tushman & Rosenkopf, 1992). If the boundary of an innovation extends across two or more different markets, however, political factors have a much greater influence because market mechanisms cannot work as a primary determinant.

To succeed in different levels of innovations, different capacities are required as an innovator. For the first level of innovation, technological excellence for the component is the key to succeed and engineers could have more voices in decision-making. By contrast, for the fourth level of innovation, managerial capacities, such as social skills, institutional entrepreneurs, and platform leadership, are required to have other actors and firms in different markets and businesses at a distance cooperate to achieve the innovation.

2.3 Boundaries of Innovation and Social Consensus Building

2.3.1 Coordination and Integration Mechanisms of the Japanese Corporate System

Given the categorization of innovation above, what could we say about the competitiveness of Japanese firms? A hypothesis we would like to present in this paper is that Japanese firms are more likely to face difficulty as they address innovation at higher levels, particularly innovation between different markets. As the starting point of this hypothesis, let us first discuss the characteristics of coordination and integration mechanisms of Japanese corporate systems.

What underlies our argument is a historical fact that Japanese corporate systems have mainly focused on local organizing with a central emphasis on employees (Suzuki, 2007). In this “employee-favoring” process of organization, Japanese firms have put great importance on the homogenization of worldviews and values among their members through shared frontline knowledge as a coordination and integration mechanism. As a result, Japanese firms have been successful in continuously orientating a relatively limited number of people in a certain direction. On the other hand, however, they have been unsuccessful in nurturing the type of leaders who are good at coordination within or between organizations above a certain level of size and diversity. In particular, skill in diplomacy to coordinate between heterogeneous communities has been hardly developed except for coincidental cases. It is this fact that has kept Japanese firms from innovation between different markets.

Bureaucrats from the relevant governmental institutions, including the former Ministry of International Trade and Industry and Ministry of Posts and Telecommunications, have been responsible for coordination between various industries and communities. Due to heavy dependence on their formal authority and Western precedents, however, they have failed to proactively develop capabilities to create original visions, design rational institutions, and exercise skill in diplomacy.

Our claim is that the clear division of labor in Japanese corporate systems – bureaucrats for innovation between different organizations and markets, and firms
for innovation within organizations – has hampered bottom-up actions on innovation between different markets through political talks and institutional design. The following sections discuss this claim further.

### 2.3.2 Innovation as Social Consensus Building

Innovation is achieved when a new system of collaboration and division of labor emerges to link multiple groups of actors ranging from producers of raw materials to purchasers, who have not been linked before (Numagami, 1999; Schumpeter, 1934). Innovation is realized when a variety of social groups possessing certain economic resources (such as physical assets, knowledge, and manpower) start to work with new partners following a new system of collaboration.\(^1\) Innovation process should not be simply described as that a new scientific or technological idea drives implementation. A new scientific or technological idea by itself is equivalent to proposing a new social system. A technological idea or architecture expressed as product design is a new social system blueprint as much as an engineering blueprint.

Therefore, innovation is achieved only when the new social system proposed is deemed attractive and legitimate by the people who are asked to take part in the system. However, it is difficult to build a consensus across the boundaries of different social groups when creating a new social system (Takeishi, Aoshima, & Karube, 2007).

It is not so difficult to reach a consensus within the members of a small group who always closely interact with each other to solve the shared problems, such as a group of engineers from the same field. Working across the boundaries of different social groups, however, involves interactions with people different in the following aspects (Arrow, 1974; Hayek, 1945, 1949, 1978; Lawrence & Lorsch, 1967):

1. **Information Owned**: People collect information through day-to-day observation and experience. When the whole factual information one group has is quite different from that of another group, it is difficult for the two groups to reach an agreement about how they recognize a fact.

2. **Interests**: Two groups with differing interests may interpret the same phenomena differently. Even when their interpretations are quite similar, their responses to the phenomena could be very different. This happens when a fact is beneficial to one group but inconvenient for the other. Since different groups with different purposes pursue their own interests, it is very difficult to build a consensus between them.

3. **World view** (epistemology/ontology): There could be a difference in world view behind the difference in their information and interests. The two groups react to different pieces of information and develop different interests because they look at the world differently (Feyerabend, 1975; Kuhn, 1962). To put it the other way

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\(^1\) Systems of collaboration here are similar to a cooperative system described by Barnard and Simon in their theories of organizational equilibrium, which includes customers as well.
around, they develop different views of the world because they are exposed to different pieces of information and pursue different interests.

These differences may stand out considerably in the process of achieving innovation. This is because innovation needs a consensus about a new idea with uncertainty, and uncertainty often augments the differences in information, interests, and world view only to make consensus building harder. Nevertheless, a consensus has to be built among multiple groups different in these three aspects to unite them to participate in a new system of collaboration and division of labor for innovation. In other words, innovation is a process of social decision making in which the members of an established social system adopt or reject a new social system. In this process a proposed new social system to produce goods and services (system of collaboration and division of labor) is accepted or turned down by a meta-social system (such as a market or political system).

There are two important remarks on the differences in information, interests and world view. One is that the existence of such differences itself is not a problem at all. What underlies a society with high productivity based on highly developed division of labor is the existence of diversified specialists networked through markets or organizations. The problem is that the members of such a society are not willing, in a state of nature, to accept a proposal of building a new system because they share the less information, interests, and world view in common, the higher the degree of division of labor (Lawrence & Lorsch, 1967; Olson, 1982). There is a fundamental contradiction inherent to a highly developed society based on division of labor – the more advanced science and technology for innovation, the more impediments people face in achieving it. A highly developed society thus needs a social mechanism that allows the reorganization of the existing developed system of division of labor, and the proposal and implementation of a new social system.

The second point to be noted is the correlation between these differences in the three aspects. As shown in Fig. 2.4, differences in world view are at the deepest place

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**Fig. 2.4** Information, interests, and world view
(The sharing of world view always entails the sharing of interests; the sharing of interests does not always entail the sharing of world view; the sharing of information does not always entail the sharing of interests; the sharing of world view always entails the sharing of information)
and affect the other two. Differences in information and interests are considered to be independent with each other. When two parties share the same information, it may reveal that their interests conflict, or may clarify that they indeed share interests. It is probable that shared interests and information could affect people’s world view over time and facilitate the homogenization thereof (Lawrence & Lorsch, 1967). Such homogenization, however, is possible only as a long-term feedback. In the short run, people’s views of the world change very little while their interests and information may change easily. So it can be concluded that world views affect information and interests in the short run while these three correlate with each other in the long run.

2.3.3 Consensus Building Beyond Community and Limitation of Japanese Firms

One could logically come up with many ways to overcome these three types of difference. However, we here discuss four means of consensus building that are deemed important when examining Japanese firms’ problems.

Figure 2.5 shows the four primary modes of consensus building for innovation. The horizontal axis divides emphasis on reconciliation of interests from emphasis on sharing frontline knowledge while the vertical axis shows the degree to which the same world view is shared. Let us examine each of the four modes according to the quadrants.

1. Communities (the most typical path to innovation for Japanese firms): Typical Japanese firms have employed new graduates all at once every year, made them share frontline knowledge, and tried to homogenize their views of the world through

![Fig. 2.5 Consensus building modes: Community, market, politics, and charisma](image)
close interactions at the frontlines of their business. They have used personnel rotation to facilitate knowledge sharing and peer interactions and thus helped build consensus among different groups within their organizations (Ouchi, 1980, 1981).

2. Markets: A market mechanism is a social system to appropriately allocate resources based only on prices without any reference to conditions particular to individual situations. It allows efficient reconciliation of interests even among people with no shared knowledge and world view by representing the value of a product or service as a price (Hayek, 1945; McMillan, 2002).

3. Political Systems: Political systems enable consensus building through legal procedures, coordination or direction by public agencies, or the exercise of power. The sharing of world views is minimal when utilizing a political system for consensus building. If the sharing of world views is sought, such efforts would end up with the first mode (socialization through sharing frontline knowledge). This mode aims at coexistence through reconciliation of different interests, accepting that different groups have different views of the world. The relationships between relevant groups in this mode are not as independent as those in the second mode (market), and not as close as those in the first mode (community). Some groups may reluctantly agree with the others following a decision of a public agency or someone with power.

4. Charismatic Leaders: In this mode, a charismatic figure creates an appealing vision or concept, sublates differences in interests, and achieves a consensus among diversified parties (believing in him or her) (House, Spangler, & Woycke, 1991; Weber, 1978).

A comparison of these four modes shows that continuity and diversity are in a trade-off relationship. For example, consensus building through sharing frontline knowledge is suited well to support a continuing activity by a limited number of people with little diversity. On the contrary, a consensus built through a market mechanism among different people with different backgrounds and interests is achieved ad hoc and will not last long because players in the market are replaceable. If a charisma appeals across different groups, the consensus built as a result of his or her leadership is expected to last longer than that built through a market mechanism. However it will be lost easily upon the disappearance of the leader unless there exists an established institutional base. In this sense, activities in this mode are not as continuous as organizational activities through socialization. Problem solving through a political system tends to be temporary because people involved share minimal degree of world views in the process of balancing conflicting interests.

As already discussed, Japanese firms excel at consensus building within communities. The odds are in favor of them when innovation is possible through consensus building within a community. It is obvious, however, that there emerges a definite limitation of this mode focusing on sharing frontline knowledge as the boundary of innovation extends to cover a larger scope, that is, innovation at a higher level in Table 2.1. In order to achieve a broader scope of innovation requiring consensus building among heterogeneous social groups, it is important to utilize market mechanisms, political systems, and charismatic leadership. These are the modes where Japanese firms have no advantage.
Among the three types of mechanisms, political systems probably are most important in addressing innovation at a higher level because the other two are less reliable and effective. One cannot rely on charismatic leadership because people with such quality are very rare. The capacity of market mechanisms is also limited in two respects. First, it is difficult to effectively use a market mechanism during the early stage of realizing innovation due to high uncertainty (it is impossible, in the first place, to prove the feasibility of a new market at this stage). Second, a market mechanism does not work well, as previously discussed, for innovation between different markets.

The success of the type of innovation that requires something more than consensus building within the same community, innovation between different markets in particular, is thus more likely to depend on whether conflicting interests can be reconciled through political approaches to diversified parties.

We don’t say that Japanese firms know nothing about politics. Japanese firms are not politically naive. They have behaved politically as much as their counterparts overseas. However their skills and experiences in political approaches for creating new markets seem to be insufficient due to their past dependence on Western precedents and governmental advice and decisions. Even though the Japanese firms have been good at collaborative value creation between supplier and buyer, innovation at a higher level require them to have much greater skills in negotiating and designing value symbiosis that their prospective innovation will generate. This kind of inter-market negotiation process would make it necessary for the Japanese firms to develop much higher level of political skills.

Even if they could make a new market with some political actions in Japan, such approach would not necessarily work well in other countries. In order to lead the world in achieving innovations between different markets, it is necessary to proactively make political actions on heterogeneous social groups on an international scale. This is not what Japanese firms are good at doing.

2.4 Innovation Challenges for Japanese Firms

2.4.1 Importance of Innovation Between Different Markets

Given what we have argued, what implications could be drawn? Which direction should Japanese firms follow for achieving innovation?

Some people might say that Japanese firms had better focus on innovations of a limited scope. In fact, large-scale innovations across different markets are rare. In most cases, the boundary of innovation stays within a specific market.

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2 Venture capital funding or corporate acquisition can be used as a market mechanism for building a consensus about a new idea with uncertainty. While firms in the United States are good at utilizing these systems, they are still under development in Japan.
Consensus building within the same community is a mechanism suitable for continuous innovation efforts of organizations with a relatively small number of people. For example, according to Takeishi et al. (2007), many Japanese firms that won Okochi Memorial Prizes, which have been given for achieving outstanding technological innovations, continued developing innovative technologies for a very long time without prospect of success, yet they succeeded eventually. Their success was often based on their strength in consensus building within a community, which is most suited to support a continuing activity. Also, the Japanese automobile industry, Japan’s most successful sector in the international market, has stayed competitive and made outstanding innovations based on their long-standing intra- and inter-firm communities.

However, there are two compelling reasons why they cannot stay within the limited scope of innovations. First, Japanese firms currently stand at the technological forefront in many sectors as a result of their past success and subsequent investment. In order to capitalize on the technologies they have developed, turn them into innovations, realize a profit to recoup their investment, and make further investment to strengthen their technological capabilities, they need to create new markets through coordination among different markets. In other words, they have to address innovations between different markets in order to keep standing at the forefront of technology.

Second, innovations between different markets are critical and inevitable to compete and survive in the information and communication technology industry, one of the most important sectors for Japan to maintain its economic growth. The industry deals in information, which can be easily processed, accumulated and transferred unlike other goods and services. It is also notable that the key technologies of the industry, such as those for semiconductor density, communication speed and capacity, and storage capacity, have maintained and are expected to continue progress. Due to these characteristics, there are opportunities to introduce innovation between different markets in this sector, and that is indeed a main battle-field of fierce competition for market dominance. Japanese firms have lagged behind their counterparts from other countries in this competition. The downfall of Japan’s flagship electronics companies, that drove the Japanese economic growth until the end of the eighties together with automakers, seems to be attributed, at least partly, to their weakness in innovation between different markets.

### 2.4.2 Organizational Problems from Within

We also would like to point out that consensus building within communities, the skill Japanese firms have traditionally been good at, has been deteriorated because of their own growth in size, diversification, and globalization.

As a firm becomes larger, more diversified, and more globalized, it will find more difficulty in sharing frontline knowledge. The existence of a variety of frontlines within the same firm would hamper the process of homogenizing world views. The
process peculiar to Japanese firms does not work well as a means to coordinate among people who usually work separately in different socialization processes. It is thus vulnerable to diversification and growth in size.

Dependence on this coordination mechanism for socialization through sharing frontline knowledge is considered to be the source of “organizational deadweight,” which characterizes large or diversified firms in Japan (Kato, Numagami, & Karube, 2007; Numagami, Karube, Kato, Tanaka, & Shimamoto, 2007). As the research project “Organizational Deadweight” has pointed out, one of the primary factors to further this characteristic is growth in organizational size. As a firm becomes larger, it witnesses the increased number of superior people to persuade as well as free riders, which makes coordination within the organization more difficult. Such situations might have arisen at many Japanese firms also because they have relied on the frontline-led coordination mechanisms, which cannot effectively link different members in a large organization. Japanese firms have grown in size to an extent that their traditional socialization mechanism through information sharing no longer works.

One possible solution to this problem is breaking up a diversified firm into smaller business units. However, this solution could cause another serious problem to the management of the diversified firm as a whole. People in different business units have access to different types of frontline knowledge and develop different views of the world, working under diversified market and technological circumstances. As a result, it is very probable that they find it difficult to interact or collaborate with the members of other business units. The same problem of poor coordination observed in innovation between different markets is likely to be observed in the relationships between the business units of the diversified firm.

Japanese firms in the information and communication technology industry have been most active in diversification, globalization, and growth in size. Compared to Japanese automakers, who have grown larger without diversification, the business activities of firms in the information and communication technology industry are far more diverse and complex (Mishina, 2002). This fact could be considered to be another factor for the stale of Japanese firms in the industry.

In sum, Japanese firms have been beset with troubles both externally and internally – externally with innovation between different markets initiated by foreign competitors, and internally with large and complex organizations that hinders frontline-led consensus building. Sony, an electronics company that once was exceptionally successful in making some innovations across different markets, have not made any visible achievements in such innovations lately due to its diversification, globalization and growth in size. Furthermore, those charismatic leaders who once managed the company are all gone now.

The homogenization of world views as well as the sharing of frontline knowledge does not work well in today’s business environment characterized by diversified expertise, increased organizational scales, and globalization. It is probably the time for Japanese firms to fundamentally renovate some of their management systems.
2.4.3 Challenges for Japanese Firms

Then what should Japanese firms do?

First, they need to further their conception, skill, and capabilities so that they could make effective political actions to achieve innovation with broader scope on a global basis. This is not an easy job. However, if they have had little chance of addressing such challenges before because they saw little necessity of doing so, there might still be some room for improvement. This is an inevitable challenge if Japanese firms aim at keep standing at the forefront of technological development.

Second, in order to adapt to the new era of diversity and scale while maintaining some qualities peculiar to Japanese firms, they are asked to change their basic attitude toward coordination. They have to be able to understand heterogeneity, while decreasing their dependence on frontline knowledge and giving up the homogenization of world views.

The only choice for them would be to establish a new collaborative system allowing close interactions between relevant groups, without putting too much emphasis on shared frontline knowledge and world views or depending on charismatic leadership. For this purpose, middle managers have to play the central role and deepen mutual understanding among them. They need to learn from each other beyond the boundaries of different industries and develop a capability to detect similarities in the deep structure of seemingly different things. In other words, they have to develop a new orientation on how to generalize and theorize their experience, and establish knowledge infrastructures to support it. What Japanese firms have to emphasize in the future is such orientation focusing on both frontline-led knowledge creation and theories with universality.

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