Chapter 2
Global Business Model Building Based on the Three Core Competences and Business Architecture

This chapter addresses the challenges faced by industries that regard their companies' technological skills as tacit knowledge that cannot be leaked. We briefly describe the increasingly competitive global market, where customer interests are elusive; hence, traditional business models should be reviewed holistically using an objective framework. We also provide a literature review guided by two questions: (1) based on the principles of core competences and business architecture, what is the ideal type of global business model? (2) how can these success factors be put into action? To answer these questions, we introduce the linkage competence model. This framework will help us clarify why certain Japanese firms have failed in their business strategies and how this can be remedied.

2.1 Introduction

In its 2001 White Paper on International Trade, Japan's Ministry of Economy, Trade and Industry (METI) expressed optimism about the nation, claiming that: "Over the decade of the 1990s when global mega-competition became manifest, the only region to achieve a steep growth rate of around seven percent in a fiercely competitive environment was East Asia." Sadly, the limelight of this "mega-competition" shifted away from Japan, and Japanese firms soon joined the rest in expanding their resource supplies and integrating their business assets for potential business opportunities. To succeed, however, it is incumbent on businesses to do more than just use their company's existing assets—they must develop new organizational capabilities. After the 2008 Lehman shock, while the developed nations' economies continuously stagnated, the growth potential of the emerging markets remained high. Yet, many Japanese companies prioritized the European and American markets and competed through innovation and differentiation of their products' quality. As a result, their products were in a higher cost range. Furthermore, some Japanese firms attempted to sell old models to match the

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purchasing power of the developing nations' buyers, but these efforts were also futile. Following these failures, it is becoming evident that what Japan needs is less emphasis on technology and branding and renewed emphasis on product development, business model rebuilding, and a resource strategy based around the needs of emerging nations (Shintaku and Amano 2009; Park and Amano 2011).

On the other hand, Korea's small domestic market forced its companies to be more heedful of the opportunities brought about by globalization. In order to differentiate themselves from rival Japanese firms, Korean companies invested heavily in the so-called volume zone in emerging markets (Park 2009). Backed up by these investments, they developed products and adapted their business model to meet and surpass the needs of the emerging markets' middle-class customers. Such radical organizational change was possible because the leaders of these firms recognized that customers in emerging markets were different from the traditional ones in developed nations and made it a priority to employ foreign workers in their subsidiaries. Hence, the Korean firms' model is of a global nature, and their human resources and organization structure are integrated with the host country's political and cultural climate.

Comparing the global strategies of Korean and Japanese companies can reveal factors that are critical to attaining international competitiveness. Collaborative research was carried out with the core firms of the Integrated Manufacturing and Information System Study Group founded by the Manufacturing Management Research Center (MMRC) of Tokyo University. During our research, we constantly asked ourselves this question: "How can we best confront the increasing turbulence of market boundaries that are challenging the global competitiveness of Japanese firms?" In this chapter, we will share insights garnered through the research, starting from the causes of the decline in competitiveness of Japanese firms. This will be followed by case studies of success as well as failure across these firms, so as to shed light on the general issue at hand. Finally, we will present current initiatives that attempt to overcome the firms' weaknesses. To facilitate the explanation of these cases, this chapter will adopt some technical terminology, specifically in the illustration of the *three competences framework*, and propose an architecture analysis method that will help overcome a major limitation of many Japanese firms, i.e., their linkage competence.

2.2 Core Competences and Business Architecture

2.2.1 Core Competences Strategy as Decisive Key for Maintaining Competitive Advantage

To support our claim that Japanese firms have deteriorated in competitiveness, we must first clarify what is generally understood as an ideal business. The basic concept is that a firm is a type of organization in society that strives to stay alive.

Whether a company succeeds in fulfilling this goal is dependent on the assets unique to that company (Lippman and Rumelt 1982; Rumelt 1984; Barney 2002). This unique resource that allows a firm to differentiate itself from its competitors is its competitive advantage. Though this concept has historically been referenced numerous times, scholars such as C.K. Prahalad and Gary Hamel reintroduced it as a theory, sparking research and leading to application in real-world business settings (Prahalad and Hamel 1990; Morone 1993).

Nonetheless, core competence cannot remain static; rather, it must evolve along with the technical advancements and environmental changes of the age. When firms refuse to reflect on this asset in relation to current changes, this may hinder their agile response to the external environment. In other words, if core competence is not coupled with periodic revision, strong organization ability can inadvertently become a "competence trap," "core incompetence," or "core rigidity" (March 1991; Leonard-Barton 1992; Henderson 1992; Dougherty 1995; Helfat and Raubitschek 2000; Dougherty and Heller 1994; Danneels 2002).

Similarly, knowledge assets embedded within a company's business routine and processes can be the source of its competitive advantage, but they may also cause it to instantaneously sink when there is a problem in its internal governance. Thus, dynamic capabilities—or the dual process of associating one's organization with an external network to gain new market opportunities, while simultaneously reflecting on one's knowledge assets in relation to global benchmarks—are vital in allowing firms to achieve the goal of sustaining themselves (Teece 1986; Helfat et al. 2007; Quinn and Dalton 2009). In this dual process of seeking new opportunities and introspection, the organization needs to emphasize skills to sense, investigate, stretch, and leverage external resources (Hamel and Prahalad 1994). We will explain these skills using the *three competences framework*, which expands on Ritter and Gemunden's model of competence, with customer competence, technology competence, and linkage competence as its three key pillars.

Ritter and Gemunden (2003) divide competence into network competence and technology competence. Network competence can be understood as the cornerstone of the dual process model, as it is the company's ability to handle, use, and exploit inter-organizational relationships. Due to the nature of this competence as a relational one, firms with good network capabilities will bring forth market-oriented innovations and marketing strategies that reinforce the relationship between them and the local market. On the other hand, technology competence is not limited to internal technological skill sets but implies the ability to search for new technologies from external sources. When these two competences are combined, Ritter and Gemunden argue that a firm has a sustainable model of both outward orientation and internal development.

This model works well in providing a general overview of a firm's fundamental competences. Yet, we argue that, in an age when market boundaries are elusive, the vague definition of network competence as "inter-organizational relationships" does not place sufficient emphasis on the core relationship, i.e., that with the customers. Hence, we have modified the model by replacing network competence with customer competence(Fig. 2.1). If it identifies expanding its access to markets as one

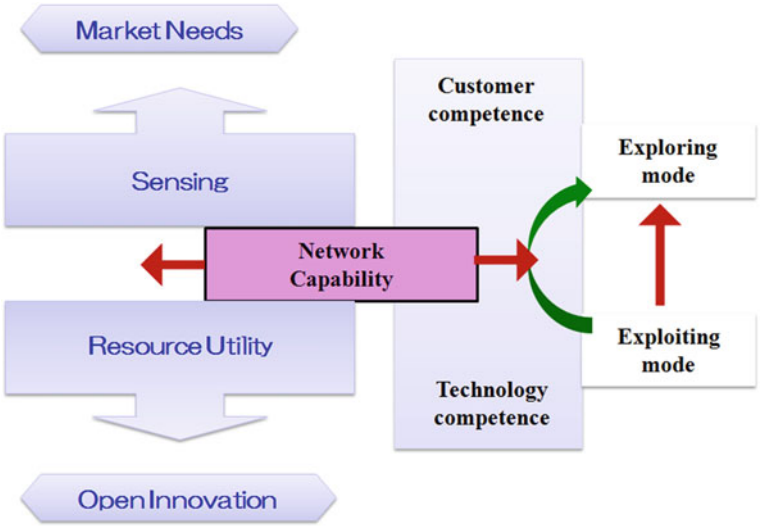

Fig. 2.1 Three competences framework. Adapted from Park and Hong (2012)

of its pillars, a company weak in customer competence will be able to cultivate sensitivity to the customers' current lifestyle. This becomes a mutual relation, as the firm can show the customers alternative ways to use its products to improve their lifestyle, thus ultimately adding value to the firm itself. Finally, the third pillar, i.e., linkage competence, integrates technology competence with customer competence. Linkage competence becomes the life source of the organization, as it converts these ideas into reality.

2.2.2 Core Competence and Business and Organizational Architecture

A question one may ask is: "If this theory truly allows my company to be competitive in this global environment, how can it be applied?" This is where product architecture comes into play. As defined in Chap. 1, product architecture is, in essence, the sum of the basic concepts that link together all core components of a product. The two major dimensions of product architecture are modular/integral and open/closed (Ulrich 1995; Fine 1998; Baldwin and Clark 2000; Fujimoto 2003), yielding a classification including four different types. These four types are seen in relation to the three competences in Fig. 2.2.

For example, firms creating products with closed integral architecture tend to emphasize technological differentiation; hence, their core competence lies in the first quadrant. In the case of open modular architecture, changes in the technology

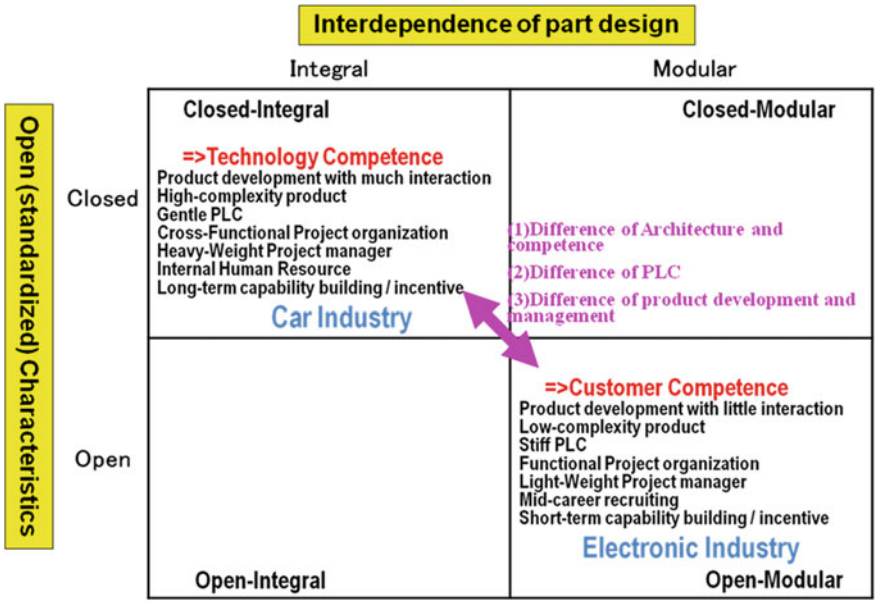

Fig. 2.2 Product architecture structure and its relationship with core competence. Adapted from Park and Hong (2012)

that competitors use will inevitably affect the entire industry; consequently, firms in this category need to strengthen their customer competence, which is the fourth quadrant. Identifying where one's competence lies will also shed light on the type of industry on which a firm should focus. For example, in the field of closed integral products, finished goods are profitable, whereas in the case of open modular products the selling of component parts is profitable (Christensen et al. 2002).

Furthermore, this framework can be a useful roadmap for firms to set long-term goals. With today's rapid advances in technology, the tides of the global business environment have shifted from the closed integral to the open modular type. Firms using this tool will also recognize that said shift implies that the life cycle of products will be shorter. In a scenario in which speed determines the winner, firms should strive to bolster their linkage competence, which will be the means for the company to swiftly adjust to the needs of the market.

2.2.3 Preliminary Steps to Building a Global Business Model

To create a business model relevant to the global market, one must firstly ask what the customer aims to achieve with the product, instead of following the usual steps

that engineers take, i.e., concentrating only on the technology of the firm. Starting from this assumption, the model aims to balance customer needs with high technology. To illustrate the model-building process, we provide the example of firms building yachts for the America's Cup race.

2.2.3.1 Step 1

In the first step, the firm asks itself: "What will an award-winning yacht look like?" The abstract idea emerging from this process is the company's vision.

2.2.3.2 Step 2

Guided by this, the company will then design the product concept to realize its vision. At this stage, the firm should ask itself which area in the business model is most suited to profit-making. By doing so, the firm constantly focuses on how to differentiate its technology competence according to the customers' needs. In this process, the clearer the vision, the easier it is to appeal to customers at later stages (e.g., marketing stage). Hence, the technology competence should never overpower the customer competence.

2.3 Analysis of Current Product Development Strategies that Do not Work

Many Japanese companies have fragile global business models for the exact reason stated above: Though they have outstanding technology competence, they struggle to attract customers due to their weak vision. Here, we investigate the specific reasons why many Japanese firms have failed to sell their products in the global market. This analysis is based on four factors: product development, management, technology, and the designer.

2.3.1 Issues Involving Product Development

2.3.1.1 Brand Development

To secure a global customer base, branding is crucial. Take the case of the motorcycle company, Harley-Davidson, Inc. Its motorcycles can cost up to 30,000 USD—and yet, it has a loyal customer base across the globe. How has the company achieved this? The answer is in its brand development. While limiting its

TV commercials, it focuses instead on holding events to create a cult-like fan base. In other words, its branding is not merely about sales but about making the customers feel enthusiastic about possessing the product and riding a Harley-Davidson as a life philosophy. We have yet to see any Japanese firm reach this stage of branding.

2.3.1.2 Galapagos Effect: Isolated Development of Globally Available Products

The danger of too much emphasis on technology competence results in developing cutting-edge technology that does not meet the global standards and, consequently, fails to capture global value. Countless Japanese tech companies have fallen into this trap, and the expression *Galapagos Effect* was coined to point to Japan as the "isolated island," where products "evolved differently from products in the rest of the world." Though many Japanese firms still believe that they can differentiate themselves solely based on technology competence, history indicates that the unwillingness to set roadmaps based on region-specific customer needs can block access to the global markets.

2.3.2 Issues Involving Business Management

When companies involved in the complex and diversified tech industry make decisions by weighing all the factors, this slows the decision-making process down.

2.3.2.1 Decision Making Concerning the Product

The following steps are indispensable when making a decision on commercialization:

Step 1 Strategy (intention).
Step 2 Decision-making logic (criterion).
Step 3 Simulating the execution of the decision.

2.3.2.2 Technical Management

Since the complex nature of the technology industry also affects the workplace, firms should implement a systemized decision-making procedure, so that lower-level managers can make decisions on their own. Giving authority and a specific roadmap to the employees in a company will reduce time wasted in the decision-making process.

2.3.3 Issues Involving Technology

2.3.3.1 Design Technology That Does Not to Lead to Sales

Firms have introduced new IT tools—such as three-dimensional machine CAD, E-CAD, CAE, PDM, Digital manufacturing, and ERP—in order to boost productivity, reduce lead times, and improve product quality. However, steps taken to improve the product development process have no direct bearing on differentiating the end product itself. Given that procedural improvement is not linked to the product's appearance, simply adopting new technology does not guarantee increased sales.

2.3.3.2 Differentiation Only by Technology Competence is Not Sufficient

In the global manufacturing age, companies that have differentiated themselves thanks to their strength in technology must remember that it will be increasingly difficult to retain that competitive advantage. For example, firms with an expertise in foundry technology are struggling, since engineers from developing markets disassemble their products in order to copy their technology.

Furthermore, in our research we have encountered countless firms that have underestimated customer needs due to overemphasis on protecting their technology. Managers from a certain Japanese firm told us that, some time ago, they realized that their competitor had miniaturized its electronic products, achieving huge success. The firm rushed to miniaturize its own products too and launched them in half the amount of time normally required for the development process. The result was that it managed to grab a large portion of the market, which shows that previous mistakes in strategic decision making can be overcome through technology competence in the product R&D process. However, the firm's managers claim that things have changed now, since upgrading the technology standards of their products do not result in increased sales. Instead, customer needs have shifted toward lower prices. This state of affairs forces firms to ask themselves: "What kind of products should we plan and develop, and how should we sell them?" and "What kind of integrated production systems are needed, and where should they be positioned?" Hence, as organizations revise their strategies to match the global manufacturing environment, they must find ways to continuously gauge the customers' shifting needs.

2.3.4 Issues Involving Engineers and Designers

2.3.4.1 Sensitivity of the Engineers

Japanese firms are struggling to maintain their market shares in many emerging markets. One reason for this is that their engineers do not understand the customer

needs in those local markets. While their production facilities are moved to emerging regions, many of their engineers remain based at the headquarters. Yet, information about the local environment cannot be fully comprehended by reading online media and books. In order to sell products in these markets, the mindset behind the product should be in line with the perspective of the local customers.

2.3.4.2 Engineers Wedded to the Organization's Tacit Knowledge and Know-How

Product designers who are unwilling to discard the company's embedded know-how are likely to build products that are not in line with the current global market trends. This may result in their firm suffering from the *Galapagos Effect*, as demonstrated by the Japanese mobile phone industry. In order to avoid path dependency, it is important for designers to standardize the company's interfaces and core technology. Only with a standardized framework can the designers develop products that are popular in the global market and ensure the retention of a loyal customer base.

2.3.4.3 The Engineers' Consciousness

Path dependency also undermines the engineers' incentive to be innovative, which has a direct impact on the endproduct. Companies with a long legacy of know-how should recruit and nurture engineers who are conscious of the environment surrounding them. Recent studies have challenged the traditional notion that engineering is suitable for individuals, mainly men, who are logical and systematic. Rather, employing men and women who can absorb the local environment just as it is and "sense" its needs is vital to breaking free of the company's path dependency. Hence, managers need to shoulder the responsibility of finding the right human resources who can make up for the company's current shortcomings.

2.4 Building a New Business Model

Now that we have analyzed four predominant issues that prevent firms from expanding in the global market, we will lay out specific steps aimed at learning from past mistakes in order to build a winning business model. As mentioned at the beginning of this chapter, a successful business model must combine customer competence and technology competence. Since most cases of failure are characterized by overemphasis on technological differentiation, we recommend that companies buttress customer competence by training employees who can understand customer needs and transmit them to the technology pillars of the firm.

2.4.1 The Framework: 3 Linkages

A successful business model has to comprise the three core competences previously introduced in this chapter: customer competence, technology competence, and linkage competence. The framework that we will illustrate here applies said three competences in the form of linkages, specifically between customer and manufacturing, product strategy and technology, and technology and components.

2.4.1.1 Linkage Between Customer and Manufacturing

This pillar involves the implementation of strategies to incorporate recent trends into the firm's products. Other strategies under this pillar are market analysis, which considers the macroeconomic situation as well as local demands, and methods to allow the firm to compete with retailers. Customer competence comes into play as the way to sense customer needs and create roadmaps to develop the company's future products.

2.4.1.2 Linkage Between Product Strategy and Technology

This pillar emphasizes the balance between superior product strategy and technology. Furthermore, corporate structures that can adapt to customer needs will be the key to the firm's longevity. Emphasis on these aspects will ensure the customers' loyalty. In order to formulate a concrete product strategy, this pillar requires technology competence. Understanding the company's technological positioning will allow continuous product differentiation and cost reduction.

2.4.1.3 Linkage Between Technology and Components

The last pillar focuses on increasing sales by leveraging the underlying technology of the firm. Because technology alone is insufficient as the firm's sole differentiating factor, it is the linkage between technology and product development that allows tangible differentiation. In other words, the linkage competence makes it possible to incorporate the other two elements into product architecture. Simultaneously, it will encourage co-creation of products with the customers and be a gateway for a new business model.

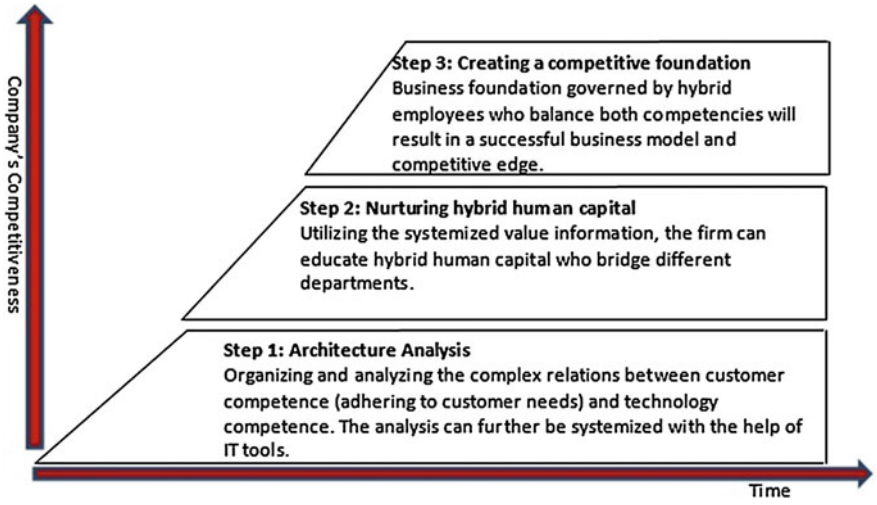

Fig. 2.3 Roadmap representing the evolution toward competitive advantage

2.4.2 The Other Element: Hybrid Human Capital

Architecture analysis is an analytical model that shows what needs to be done in order to achieve competitive manufacturing, but the model alone is not enough. To develop and support competitive manufacturing, the organization needs employees who can apply said architecture analysis to the company, people that we call hybrid human capital. Hybrid human capital refers to engineers who have an entrepreneurial mind as well as market researchers and salesmen who are in close contact with the local customers. In other words, hybrid human capital encompasses both customer competence and technology competence. At the very least, the firm's executives should cultivate this capability and, depending on the situation, talented individuals should be assigned to the engineering, market research, or sales divisions (Fig. 2.3).

2.5 Conclusion

By looking at product development, business management, technology, and engineering, this chapter has fleshed out several reasons why firms fail to maintain their global competitiveness. Based on these elements, we propose a framework for a global business model that may allow companies to objectively assess which parts of their organization need change. Ultimately, however, a perfect business model needs to be placed in the hands of employees who are hybrid human capital. These employees can balance customer competence and technology competence. We urge

Human Resources departments to identify employees who have interdisciplinary capabilities and nurture these talents. In the following chapters, we will illustrate concrete examples of firms that have succeeded in utilizing the architecture analysis, as well as cases of failure.

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