Approaching indirectly to complementors and taking neutral position in platform: exploratory research on the progression from a start-up to a platform leader

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Abstract: How does a small start-up become a platform leader from the viewpoint of inducing complementors? Previous researches on platform management seem to focus on platform design and the relationship between complementors and platform leaders. However, samples used in these researches are large, established leaders, and strategies for start-ups have not been studied in detail. From single case studies about the progression of a Japanese platform leader, we found that collaborations with organisations at the centre of networks are useful because: 1) these collaborations provide start-ups paths to complementors; 2) these collaborations enhance the trustworthiness of start-ups; 3) the higher the number of collaborations, the more neutral the position enjoyed by platform leaders, even as start-ups.

Keywords: start-up; entrepreneur; platform management; platform leader; complementor; inter-organisational relationship; neutrality; industry broker; business-to-business electronic marketplace.

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1 Introduction

Our research question deals with how start-ups become platform leaders from the viewpoint of inducing complementors, which often are larger than the start-ups themselves. Platforms have attracted the interest of business management researchers (Gawer and Cusumano, 2002, 2008; Rochet and Tirole, 2003). A platform is a service or space in which many related businesses participate. Platform leaders that excel at creating and managing platforms have great advantages in information technology (IT), finance and the retail industry. Growth of firms such as Intel, Sony, Nintendo, Microsoft, Amazon and Apple can be partly explained through the lens of platform management. Currently, platform management is thought to apply only to established firms. However, the process by which start-ups become platforms has not yet been explored in detail. The purpose of this study is to fill this gap.

An important managerial point is the relationship between platform leaders and complementors that provide their products or services to platforms. To induce complementors, previous researches suggest two things platform leaders should take care of. First, platform leaders should design their platforms carefully. In particular, different pricing for complimentary products or services (Rochet and Tirole, 2003) and bundling of several functions (Nalebuff, 2003, 2004; Eisenmann et al., 2007, 2011) are representative strategies. Second, platform leaders should build good relationships with complementors. To manage complementors, established platform leaders should be trustworthy (Gawer and Cusumano, 2002, 2007) and be able to occasionally exercise power over complementors (Perrons, 2009).

However, these strategies are not applied to start-ups that want to become platform leaders. The point is that start-ups are usually smaller than established platform leaders. First, although start-ups can develop platforms that solve problems in certain industries, they cannot compete with other platforms because their smaller size makes it difficult for them to negotiate with larger complementors. Second, their smaller size makes it difficult for start-ups to build trust, exercise power and enhance their reputation of being neutral industry brokers. To accomplish these goals, different strategies are required.

Through a single case study of one of Japan's prominent business-to-business (B2B) electronic marketplace operators, we find that collaborations with organisations at the centre of a network increase the number of complementors because:

1 collaborations provide start-ups paths to complementors

2 collaborations enhance the trustworthiness of start-ups

3 the greater the number of collaborations, the more neutral the position enjoyed by platform leaders, even if they are start-ups.

This study is organised as follows. Section 2 provides a discussion of relevant literature and shapes the focus of the study. Section 3 describes the methodology and data used. Section 4 describes the case study of the firm that we examined. In Section 5, we discuss our case and show its implications for researchers, practitioners and further research. Finally, Section 6 concludes.

2 Literature review

In this section, we review the literature regarding platform management and posit our research. Previous literature highlighted the importance of platform design and the relationship between complementors and platforms. However, how start-ups accomplish these goals has not been studied in detail.

The stream of platform management follows the research of Gawer and Cusumano (2002) and has expanded into the concept of industry platforms (Gawer and Cusumano, 2014) and business ecosystems (Iansiti and Levien, 2004). A platform is a product or service in which many related businesses participate. Platforms occur widely in the fields of IT, automobiles, credit cards and retail shopping malls (Gawer and Cusumano, 2002; Suarez and Cusumano, 2009; Rochet and Tirole, 2003).

An important point about platform management is how to induce complementors to join platforms and how to build a good relationship between complementors and platform leaders. The utility of a platform is not decided by the platform itself because a static platform itself simply intermediates complementors' activity. In the case of credit card, some complementors provide various substantial services in the platform, and others consume them. Therefore, the utility of a platform to some extent depends on the number of complementors (Gawer and Cusumano, 2014). The number of complementors depends on the incentives that can be gained by participating in platforms and by the relationship between complementors and platform leaders. Previous research regarding these issues has progressed in two streams: platform design and the relationship between complementors and platform leaders. We review these two approaches and describe that they have not sufficiently explained the process by which start-ups become platform leaders.

The first stream concerns platform design. Several platform strategies have been introduced to induce platforms to prosper. For example, Rochet and Tirole (2003) stressed the different pricing strategies between two types of complementors which they called a 'two-sided market'. In the case of credit cards, even though merchants want customers to use credit cards for some of their purchases, individual cardholders do not always pay annual fees. Nalebuff (2003, 2004) proposed a 'bundling' that integrates multiple complementary products or services into one. One example is the integration of Microsoft's operating system and internet browser. When this bundling is leveraged to enter other platforms, this strategy is called 'platform envelopment' (Eisenmann et al., 2007, 2011; Hidding et al., 2011; Gawer and Cusumano, 2008). These strategies are regarded as the design approach for platforms because platform leaders decide what product and service functions are included in their platforms and how to price them. The basic idea behind this approach is that a well-designed platform will induce complementors so that the platform leaders win the competition.

However, little research has been undertaken regarding how to become a platform leader from this point of view. Gawer and Cusumano (2007, 2008), however, presented a

two-phased strategy for this purpose: 'coring' and 'tipping'. 'Coring', the first step, creates a new platform that has never existed before. For example, 'coring' includes solving an essential system problem and creating incentives for complementors to contribute and innovate. 'Tipping' is a set of strategies to win platform competition. For example, 'tipping' consists of developing unique features or providing more incentives to complementors than provided by competitors. Another strategy is the 'staircase strategy', which upgrades services to include other platforms (Hidding et al., 2011). This strategy requires compatibility between platforms as well as backwards compatibility, where customers can continue to use older applications and functions even after newer versions appear.

'Coring', 'tipping' and the 'staircase strategy' are also related to designing a platform for technological development. However, it seems not to be sufficient for start-ups to become platform leaders because firm size also influences the effectiveness of these strategies. Gawer and Cusumano (2008) recognised the difficulty of executing these strategies, particularly 'tipping', because 'tipping' includes negotiating with larger complementors. These strategies seem to be exercised when platform leaders grow to some extent.

The second stream is about the relationship between complementors and platform leaders. Basically, platform leaders should resolve the probability of conflicts between themselves and complementors (Gawer and Cusumano, 2002). Conflicts occur when platform leaders require small complementors to risk investing in unfinished technologies and when platform leaders are probable to change their strategy. To avoid these conflicts, Gawer and Cusumano (2002) stressed the need for trust with complementors. Platform leaders must manage four aspects: maintaining consistency regarding leaders' strategies, limiting leaders' business areas to avoid competing with complementors, managing the speed of establishing platforms and opening platforms' specifications. By building their reputations, platform leaders become neutral brokers and create value for the whole industry. In addition to trust, Perrons (2009) focused on the power that platform leaders exercise over complementors.

However, both Gawer and Cusumano (2002) and Perrons (2009) focused on Intel, an established technology firm. This firm has a strong presence and a high reputation in the IT industry, so it should withhold exercising its power to enhance trust with platform leaders and to make leaders neutral. In contrast, small start-ups with a limited history have trouble collaborating with suitable complementors, even if the start-ups' platforms are well designed. Strategies used by established platform leaders would not be applicable to start-ups.

In short, platform leaders should take care of their platforms' design and their relationship with complementors. However, small start-ups might have difficulties exercising their strategies and building good relationships. Therefore, to compensate for this deficit, start-ups need more specific strategies. There have been little literatures about this so that we explore a successful start-up in detail to expand our understanding.

3 Method

We use a single case study to explore our research question, 'how start-ups become platform leaders from the view point of inducing complementors'. Although single case

studies are scientifically less robust compared with empirical researches in building new theories, they are useful to analyse extreme examples in the context of one industry (Eisenhardt and Graebner, 2007; Yin, 2009). Platform management is suited to a single case study approach because the number of platform leaders and, in particular, the number of successful platform leaders is not large.

Moreover, this method has been shown to be notably appropriate for exploratory studies or for gaining a holistic understanding of entrepreneurship (Dana and Dana, 2005). To explore the process from a start-up to a platform leader, highly distinctive strategic decisions in each context should be made clear. Even if we focus on decisions about inter-organisational relationships in platforms, the kind of relationships that can be found is not obvious in advance. Therefore, exploratory approach is required. Overall, small number of samples and the exploratory purposes are consistent; a single case study is an appropriate method.

Our selected case is the B2B electronic marketplace, designed and operated by platform leaders, where many commercial transactions occur. The first reason for selecting this industry is the inherent difficulties in operating a B2B electronic marketplace. Historically, many B2B electronic marketplaces have been growing early 2000s. However many of them have been in trouble, and some have shut down (Wang et al., 2012; Rao et al., 2007). Platform leaders in this industry have operated by trial and error for a longer period than social network services such as Facebook or Twitter. Therefore, this industry is suitable as a test case of the start-up process. Second, the relationship between platform leaders and complementors in the B2B electronic marketplace is simpler than in other technological platforms such as Android or iOS because technological platforms require complementors to invest their managerial resources to fit their products or services to the standard set by technological platform leaders such as Google or Apple. However, instead of continuous R&D to follow evolving technological standards, complementors in the B2B electronic marketplace will decide only whether or not to participate in the marketplace. This characteristic allows us to control complementors' R&D activities. Therefore, the B2B electronic marketplace is a suitable case example for complementor participation, the focus of our research.

Our specific case study involves Infomart Corporation, an operator of a B2B platform of food industry in Japan, including a B2B electronic marketplace. This firm was founded by CEO Katsuteru Murakami in 1998, early in the era of electronic marketplaces. Only four people were involved, so Infomart should be considered a start-up. The company began as a B2B electronic marketplace business and added three services. One of these services, instead of the B2B electronic marketplace, had a 16% market share of all food ingredient transactions in Japan. Therefore, Infomart became part of a food service infrastructure that generally excluded the electronic market; it is said that 'any anomalies in any of these (electricity, gas, water supply, Infomart) would lead to trouble in the food service business' (FISCO Ltd., 2011). Infomart received six awards between 2002 and 2015 and was listed on the first market of the Tokyo Stock Exchange in 2015. Owing to these characteristics, this firm is appropriate for our case study.

We collected data principally from Infomart's annual reports, news releases and in-depth interviews with the CEO and managers. A total of four managers were interviewed. The CEO and founder of Infomart, Katsuteru Murakami, was interviewed four times for a total of 320 minutes. Shoji Metabi, Senior Vice President and a co-founder, was interviewed twice for a total of 185 minutes. Ken Nakajima, Director

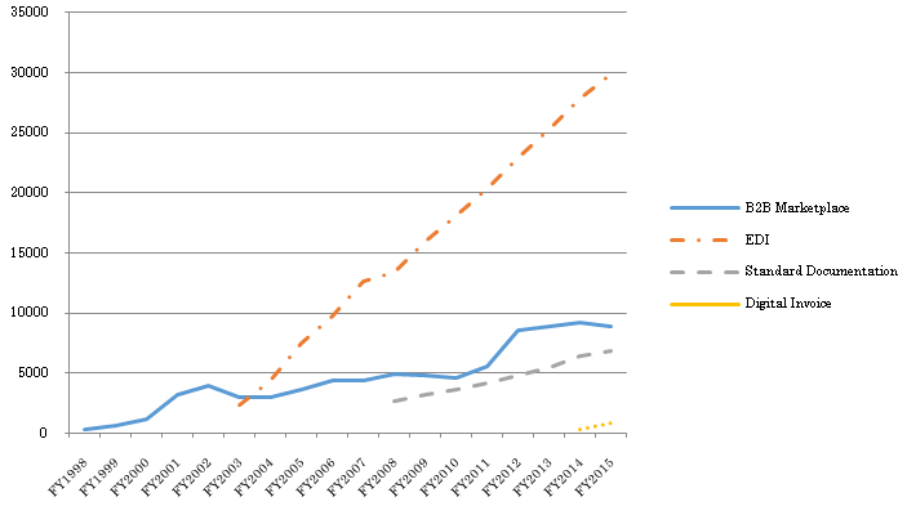
and Executive General Manager, was interviewed six times for a total of 460 minutes, and Kazutaka Kato, an outside director and board member (who also founded the Japan Foodservice Association), was interviewed once for a total of 65 minutes, as described below. We also used archival material as a secondary source, such as the *Nihon Keizai Shinbun, Nikkei Restaurants, Nikkei Information Strategy* (published by Nikkei, Inc.) and *the Japan Agricultural Times* (published by Agricultural Technology Communications Co., Ltd.).

4 Case

4.1 Infomart and the B2B electronic marketplace

Infomart's CEO, Katsuteru Murakami, started Infomart as a B2B electronic marketplace business in 1998. Its secondary service was electronic data interchange, a business initiated in 2003, that later became the firm's main cash cow. The third service, undertaken in 2008, was standard documentation for processed food additives. Finally, in 2015, Infomart started its fourth business, an online invoice service, that included all industries, including the food industry. Although these four services are related to each other, we focus on the B2B electronic marketplace business.

Figure 1 Number of customers (see online version for colours)



Murakami's career history was broad. He had been a fashion clothing retailer and a salesperson for construction firms in 1980s and early 1990s. However, he did not have any experience in the IT industry. He created a service to connect food manufacturers (sellers) and restaurants or retailers (buyers) as his first e-commerce business. His 303 customers (both sellers and buyers) in 1999 rose to 8,867 in 2016, comprising 1,821 sellers and 6,853 buyers (see Figure 1), while the number of food products reached over 650,000.

Although Infomart was considered the first mover in this field, competitors soon entered. Some operated in the marketplace for specific foods, such as alcoholic beverages or fresh fish, while others did business in all food categories (Table 1).

Table 1 B2B electronic marketplace in the food industry

Name	*Operator*	*Still operating?*
Syoku-Do-Raku	Hanshin Shuhan (originator: Evervision)	Yes
M Mart	M Mart	Yes
Agri Plat	Cascade	No
Foods Market	Digital Farm	No
Net Supply System	New Tokyo	No
Syokuzai-Zukan	Osaka Prefecture Food Industry Association	No
Hanjyo-net	BB Net	No
Chef's Oisix	Oisix	No

Despite Infomart's success, smaller competitors continued to exist. *Syoku-Do-Raku,* which began in 2001, now sells over 3,000 food items. *M Mart*, which was founded in 2000 and is Infomart's main competitor, has over 400,000 subscribers. However, only a very small number of subscribers actually use M Mart's service, and most are non-active subscribers. Therefore, Infomart is recognised as the leading B2B electronic marketplace in the food industry.

Infomart developed its business model by monetising the B2B electronic marketplace. The business model in this marketplace is generally divided into either a monthly fee model or a transaction fee model. According to Shoji Metabi, Infomart's Senior Vice President, Infomart chose the former model because a transaction fee model might lead sellers and buyers to direct business away from Infomart (Nikkei Inc., 2000). Infomart sets a low monthly fee ($40) for buyers, such as restaurants, supermarkets and department stores, to increase its number of customers. Conversely, with an initial fee of $1,000 and a monthly fee of $250, charges to sellers, such as farmers and food manufacturers, are relatively high. This different pricing shows that this marketplace is a typical platform. Moreover, legal representation was required to maintain trust in the marketplace. However, these requirements made it difficult for small farmers to enter Infomart's marketplace.

The marketplace was not highly differentiated. In fact, Infomart's first marketplace was very simple. CEO Murakami told us that its function was to match buyers and sellers of good ingredients in the marketplace with only the click of a button required to email an order. This simple functionality was intentional. Murakami stated, 'this marketplace is the place where each buyer selects products through professionals' eyes' (Nikkei Inc., 1999). Infomart's first version required nearly $40,000 to develop. After releasing its first version in June 1998, Infomart continuously added new services to the marketplace against the original intent.

In this section, we presented that even though Infomart now has the largest number of complementors in its marketplace, Murakami does not have any special IT skills, and the service provided was not highly complex. Therefore, we can control the effects of resources and capabilities and differentiate the initial service. To induce complementors and to improve relationships with shareholders, we describe three new services hereafter. Each section below presents each service and short summary.

4.2 New services through in-house development

Potential complementors are willing to participate in platforms if platform leaders heighten their platforms' usability. Infomart's service expansion was accomplished not only through in-house development but also through collaboration. In this section, we focus on in-house development, which can be divided into complementary services and new markets.

Complementary services promote transactions between sellers and buyers. First, the *Yearly Calendar Procurement System*, patented in September 2001, helps buyers procure items from the best sellers throughout the year. Because of large climate distinctions between geographic locations in Japan, buyers must select the best farmers each season. Infomart's procurement system automatically indicates to buyers the best farmer during a specific period. Second, the *Adverse Auction*, introduced in August 2000, allows sellers to make a 'reverse bid' to buyers. Third, the *Automatic Matching System*, introduced in September 2002, puts sellers and buyers together automatically based on conditions that sellers or buyers input. In addition to these new services, in September 2000, Infomart sets up a meeting space, called the *Professional Food Ingredient Plaza*, in its office. It also started the *Emergent Transaction Corner* in November 2000 and expanded the number of online catalogues in March 2001.

In addition, Infomart expanded its product categories in-house. The *Outlet Mart*, introduced in June 2001, is its marketplace for non-standardised food ingredients. The *Free Market*, which began at the same time, allows both sellers and buyers to remain anonymous. At *Material Mart*, introduced in December 2001, complementors can sell and buy kitchen equipment. The *National Specialty Food Mart*, which started in 2011, contributes new services and markets to induce potential participants.

In this section, we explored new services developed in-house and found that there remain possibilities of the effect of in-house development. However, more new services were developed through collaborations.

4.3 New services developed through collaboration

Infomart also developed new services by collaborating with outside organisations. First, a *Settlement Agent Service*, with assistance from Sanwa Capital, began in November 2000 for the first time in Japan. By charging a 5%–10% premium, the service protects both sellers and buyers and promotes business even if sellers and buyers do not know each other well. This meant that anonymous sellers or buyers could safely initiate transactions. This settlement agent service was updated in May 2001 with QUOQ, Inc., a subsidiary of the Sumitomo Mitsui Banking Corporation; in January 2002 with JBP; in March 2006 with ORIX Corporation and in July 2008 with Fidic Co., Ltd. Revenues from this service totalled $1 million per month in recent years. Ken Nakajima, who came from Sanwa Bank and is now a director of Infomart, told us that almost 5%–10% of all the company's new transactions use this service. Therefore, it can be estimated that almost $10–$20 million is generated in revenue from new transactional relationships monthly by the settlement agent service.

The second new service introduced through cooperation with outside organisations was *Recipe Mart*, which started in February 2002. Buyers using this service can search recipes by ingredients, by seasons or by famous chefs' names and obtain information about where to buy ingredients. Sellers can also ask Infomart to create new recipes using

sellers' products. Consulting firms for restaurants and recipe-developing firms, such as the Tsuji Culinary Institute, cooperated with Infomart to create recipes.

In this section, we present two services developed with partners. Both required professional skills or knowledge in each area. In particular, although the settlement agent service increased transactions, it required financial knowledge or experience. Since Infomart's business was operating a B2B electronic marketplace, it required help from an outside organisation for the new financial service. Both the settlement agent service and *Recipe Mart* could not have been introduced without collaborations.

4.4 New services that linked with other marketplaces

Infomart increased its number of complementors by introducing new product line-ups, derived from collaborating with other marketplaces. In October 1999, Infomart partnered with Yoshii Co., which operated *Goku-Shuka World*, a marketplace for alcoholic beverages. This marketplace was founded to compete with mass retailers. The number of complementors in this marketplace totalled over 100 brewing firms and 400 small retailers. Metabi stated us that one reason for this collaboration was that the firms were located in the same home prefecture.

Another example was the marketplace for fresh fish. Infomart collaborated with FIS Japan Co., which has provided information about the fish industry worldwide since 1995. FIS Japan started a B2B electronic marketplace for fresh fish called *Fish Online* in 2000. It collaborated with *M Mart* in December 2002, which is one of competitors of Infomart, and with Infomart in May 2003. Although there were under 100 sellers at that time, seven large firms in Japan, such as Nicherei Corp. and Nippon Suisan Kaisha, Ltd., were included. The number of buyers exceeded 500 in 2001. In addition, in 2008, Infomart connected its marketplace to another marketplace for fresh fish operated by a start-up named Shun-zai Co. About 20 sellers and 30 buyers participated in this marketplace at that time. Complementors of Infomart, such as *Goku-Shuka World*, *Fish Online* and *Shun-zai*, could find new customers in this united marketplace.

In this section, we presented new services through connecting with other marketplaces. Because each area required special knowledge and industry connections, these collaborations were timesaving for Infomart, allowing it to expand its product line and customer base.

4.5 Collaboration with industry associations

The firm also tried to increase the number of new complementors. Of course, Infomart leveraged facsimile, direct mail and seminars to increase the number of its customers. It also collaborated with several industry associations such as the Japan Foodservice Association (JFA), the Japan Self-Service Association (JSSA) and the Osaka Chamber of Commerce and Industry. These partners were divided into buyer-side organisations and seller-side organisations.

The buyer-side representative was JFA. The collaboration with JFA, which started in 2000, played a very important role for Infomart. This association has been at the centre of the food service industry in Japan. Murakami explained us, 'These industry associations have much know-how for running business and many firms are there, so I thought that if my firm can connect, the business will spread in one breathe'. He also told us, "Japan Foodservice Association was the centre of the food service industry in Japan. So, I tried

to contact it first". Murakami approached JFA in 1998 to propose a joint project. However, two years after the joint project began, the Director of JFA, Kazutaka Kato, who is now also an outside director at Infomart, clamed modifications to the proposal. These modifications were made two years and the new service named *JF Infomart* began. JFA had over 400 participants that occupied about 80% of the Japanese food service industry at that time. Metabi recognised that "the impact of the collaboration was huge". JFA called Infomart for seminars and meetings where Infomart could present the joint business. In July 2001, collaboration with JSSA began with the same intent. The marketplace that developed from this collaboration was named *JSSA Infomart*.

On the seller side, Infomart collaborated with Agricultural Communications Co., Ltd. (AC), an agriculture publisher, and started *No-tsu Infomart* in June 2001. Although some Japanese farmers produced sophisticated agricultural products, the farmer output has been much smaller than in the USA and Australia. Their small size put Japanese farmers at a disadvantage in business. For example, many of them could not operate personal computers to participate in Infomart's marketplace, or they could not produce their products throughout the year. Therefore, multiple supports by other organisations or institutes were required. Japan Agricultural Cooperatives have been supportive. An officer of AC explained that hurdles to joining Infomart are high for small farmers because many of these farmers cannot sell their products throughout the year or do not have legal representation (Agricultural Communications Co. Ltd., 2001). Therefore, collaboration is good for them because they can be supported by both Infomart and AC.

The collaboration with the Osaka Chamber of Commerce and Industry has contributed to both sellers and buyers. Infomart participated in the *Business Mall*, which already provided its participants with a variety of services, including website building, credit management and payroll. Other chambers from all over Japan also joined Infomart, so participants were not limited to the Osaka Prefecture where Osaka Chamber's central office is located. The mission of the Chamber of Commerce and Industry is to support small- and medium-sized firms and to stimulate local economies. The number of participants in the *Business Mall*, which equates the number of potential complementors, reached almost 250,000 and involved over 100 local chambers of commerce and industry. Many locations and varieties of industries participate in each chamber. Infomart held seminars, organised by local chambers, and increased the number of complementors from all over Japan.

A large number of collaborations with small-sized local networks began in 2006 when Infomart started a new service called *Shokuzai Ko-shien* (The National Convention for Food Ingredients). Infomart collaborated with Microsoft, local banks and local governments to find new sellers. New local complementors sold their products in each prefecture corner in the marketplace. The first was Nagasaki Prefecture, supported by the Eighteenth Bank, in January 2006. The number of prefectures reached 30 in August 2007 when 533 new sellers were marketing over 9,300 products. Infomart also gathered stakeholders of this business and organised a study group named the *Shokuzai Ko-shien Study Group* (The Study Group of the National Convention for Food Ingredients). Representatives in this study group included the Eighteenth Bank, JFA, Microsoft, the Gifu Prefectural Government, Ehime Prefecture, the Small and Medium-Size Enterprise Association and others.

One important point about the characteristics of these associations should be noted. Although the marketplace has been Infomart's central business, as described above,

collaborations with Infomart have not been a principal activity for all associations. According to Kazutaka Kato, JFA was founded to industrialise the food industry so that first of all, this association could establish health insurance and pensions for employees and restaurant owners in the industry. Moreover, the association is involved in international affairs and organises food security and education seminars for restaurants. Therefore, the joint project with Infomart is only one of many activities. This is applicable to other associations as well. The JSSA's wide range of tasks, like the JFA, includes seminars, publishing and holding exhibitions in addition to business matching. AC's business field is publishing and supporting farmers in multiple areas. The Osaka Chamber of Commerce and Industry's mission is to contribute to the local economy.

Instead of looking at each collaboration separately, Murakami had a vision for mixing the collaborations, for increasing the number of complementors and for remaining neutral. Several years after the *JF Infomart* started, Murakami and Kato decided to remove the capital letters from JF Infomart. At the same time, the capital letters from *JSSA Infomart* were also removed. It could be said that Infomart was able to obtain complementors without using specific organisations.

In this section, we presented how Infomart leveraged its many collaborations with industry associations. These collaborations enabled Infomart to increase complementors for both buyers and sellers. Without these collaborations, many of the firms could not do business. These industry associations used interchange points to access complementors, and also complimented Infomart's low trustworthiness. Moreover, it might be said that this collaboration succeeded because Infomart's business was not a central activity for large industry associations such as the JFA or the Osaka Chamber of Commerce and Industry.

4.6 Shareholders

Infomart carefully considered its shareholders. During its second round of capital formation in September 2000, it chose Mitsubishi Corporation, Mitsui & Co., Ltd. and Sanwa Capital as new shareholders in addition to an existing shareholder named ICG, an investment company located in the US ownership was distributed as follows: 6.9% (Mitsubishi), 3.5% (Mitsui), 3.5% (Sanwa) and 40% (ICG). The important point is the origin of the three new Japanese shareholders. Mitsubishi and Mitsui were two of the three largest *zaibatsu* (Japanese conglomerates) before World War II and have remained central members of the Mitsubishi and Mitsui groups, respectively. Sanwa, also a *zaibatsu*, was a member of the Sanwa Group as a subsidiary of Sanwa Bank.

Infomart increased its capital again by $1.4 million in December 2001. Of this, $90 million was invested by Sanwa Bank, which is the parent firm of Sanwa Capital, and $30 million came from Sumitomo Mitsui Banking Corporation (Sumitomo Bank and Sakura Bank of the Mitsui Group were merged in April 2001). According to Nakajima, the investment decision was initiated by Sumitomo Bank. Sumitomo Bank, another *zaibatsu*, had a history of over 400 years, and along with Mitsui and Mitsubishi, was thought to be the last of the three largest zaibatsu.

These new shareholders brought Infomart not only capital but also new complementors. Moreover, Murakami recalled, "I tried hard to be invested in Mitsubishi and Mitsui at the same time… Our business is a platform so that, not to say that we are public, we are free from being influenced by other companies… Moreover, being invested not from subsidiaries but from main companies is supposed to be worthwhile".

In this section, we focused on finance. Our case indicates that Infomart took care of investors' property. This provided three benefits. Infomart added to its capital, approached new complementors that it would otherwise not have been able to approach and created an image of not belonging to a specific group.

5 Discussions, implications and limitations

5.1 Discussion

Our principal research question is how a small start-up becomes a platform leader from the viewpoint of inducing complementors. Previous literature focused on the design of the platform itself and the relationship between complementors and platform leaders. However, the companies in these literatures are large, established platform leaders such as Intel or Microsoft. The process of growing from a start-up to a platform leader has not been explored in detail. This single case study fills this overlooked area. We now summarise our case and then discuss it.

First, in addition to in-house development (Section 4.2), Infomart collaborated with many outside organisations for several purposes: to start new services (Section 4.3), to link to other marketplaces (Section 4.4) and to increase the number of complementors (Section 4.5). Second, the targets that Infomart approached were central organisations in each area (Section 4.5 and 4.6). We call the central organisation a network hub and each area a network. For example, JFA is at the centre of the food service industry, and Mitsui and Mitsubishi are its representatives in Japan. This suggests the importance of collaborating with the central organisations of each network. Collaborations with these network hubs may allow start-ups to increase the number of complementors at one time. Collaboration with network hubs means not only an increase in complementors but also an increase in trustworthiness through reputation. Third, instead of participating under a specific network or organisation (Sections 4.4, 4.5 and 4.6), Infomart remained neutral.

These points show that collaborations with network hubs increase the number of complementors, which is required to enhance platform utility and for the process of progressing from a start-up to a platform leader. Although collaborations, alliances or open innovation are effective for start-ups, as described in previous research (Ahuja, 2000; Baum et al., 2000; Chesbrough, 2006), our case shows that these three paths would mediate from collaborations to increasing the number of complementors. First, start-ups could approach complementors via network hubs which have many member relationships. For example, JFA consisted of many food service firms, and the association also mediated between members. Therefore, even start-ups can access potential complementors via network hubs.

This finding relates social network theory. A representative work, 'The Strength of Weak Ties' (Granovetter, 1973), shows that new information increases among people with weaker, rather than stronger, ties. The social network theory stresses the importance of connecting with new partners because collaboration enhances an entity's performance, including that of business firms. Our findings show that this theory is also applicable in platform management.

Second, start-ups could enhance their services' trustworthiness through collaborations. JFA and Infomart named their joint project *JF Infomart* to diffuse the service and removed 'JF' because JFA and Infomart recognised that the service became

trustworthy after years. This shows that promotion with established organisations that collaborate with start-ups stimulates potential complementors.

Collaborations give start-ups several direct benefits, such as higher revenues (Baum et al., 2000) or number of patents (Shan et al., 1994). Collaborations with larger firms increase start-ups' bargaining power with other organisations (Bosse and Alvarez, 2010). Our findings show that trustworthiness also results from collaborations with larger organisations.

Third, start-ups could become neutral industry brokers by collaborating with several network hubs. The number of network hubs collaborated with will increase trustworthiness and induce complementors to refrain from joining a specific business group due to neutral positioning. Rather than joining a specific organisation, collaborations with several network hubs would promote neutrality and induce participation by more complementors from outside the networks.

When there is a size imbalance between start-ups and larger complementors, collaborations with larger complementors might remind others that platforms exist under a specific network. This situation would work negatively. Potential complementors might fear that their reputation would decrease under a network, particularly in a country where business groups and conglomerates prevail, such as in Japan and Korea (Sheard, 1989; Berglöf and Perotti, 1994). Therefore, potential complementors may decide not to participate in a platform. Such exclusivity is pointed out in the literature about business groups (Yaginuma, 1993; Shimotani, 1995). However, members of each network and other potential complementors might participate when the platform leader collaborates with several network hubs. Therefore, collaborations with several network hubs would enhance the reputation that a platform leader is a neutral industry broker and also induce more complementors from outside the networks. This finding expands previous literatures (Gawer and Cusumano, 2002, 2007). The previous literatures stressed the importance of reputation for a neutral industry broker, which creates value for a platform. However, this means that established platform leaders that take care of small complementors, instead of excising their power to them. Our findings add another means by which even start-ups can enhance their reputation.

5.2 Implications

Our research contributes to both researchers in several fields as well as practitioners. First, our findings contribute to the researches of collaborations or alliances field. Our case implies that a firm's size should be observed carefully and relatively. Almost all organisations have several missions and operate several businesses or activities. Generally, these activities are divided into core and non-core activities (Heikkilä and Cordon, 2002). Core activities are related to the organisation's core competence (Prahalad and Hamel, 2006). Non-core activities are not related to a firm's core competence, so they are generally easier to outsource (Heikkilä and Cordon, 2002). This classification might be applied to partner selection and indicate the likelihood of a successful collaboration. Even though start-ups are small, they can collaborate with larger partners if the activities of start-ups are non-core for their larger partners. This implies that partner selection is related not only to size, nationality or type of organisation but also to the classification of a firm's activities.

Second, our findings contribute to research of B2B electronic marketplace. This research has preceded in various perspectives, such as electronic marketplace success, electronic marketplace adoption (participation), impact of electronic marketplace and so on (Wang et al., 2008; Standing et al., 2010). Our findings show that the research of platform management would be applicable for electronic marketplace researches. And electronic marketplace researches would also be applicable for platform management.

Third, our findings also contribute to practitioners. In addition to platform design, our case stresses the importance of networking. Potential complementors do not always decide to participate in a platform because of the service provided there. Therefore, in addition to designing their platforms well, start-ups should approach them in other ways, via network hubs of industry associations or business groups.

Fourth, collaboration with network hubs needs to move the direction of recruitment expenditures from each complementor to network hubs. Therefore, it is necessary for platform leaders to suggest incentives to these hubs to induce participants into their networks. The incentives would be different from that for complementors.

5.3 Limitations

Although our research contributes to some previous studies, several limitations still remain. First, our case concerns a B2B electronic marketplace and, therefore, complementors' R&D investments to follow platform evolutions are not considered. Following platform evolutions is a more involved decision than just participating in them. Whether start-ups can motivate larger complementors to invest in R&D is not yet clear. A second limitation is derived from our methodology, a single case study. Other cases or empirical research will be required for more generalised conclusions. These limitations indicate the direction of further research.

6 Conclusions

Our purpose is to explore how start-ups become platform leaders from the viewpoint of inducing complementors. Previous literature focused on platform design and the relationship between complementors and platform leaders. However, these is presuppose that platform leaders are large, so the process from start-ups to platform leaders has not yet been explained. Our single case study shows the importance of collaborations with organisations at the centre of networks. These organisations increase complementors using three paths. First, these organisations play a mediation role to reach potential complementors. Second, they enhance the trustworthiness of start-ups. Third, several collaborations increase the reputation of the start-up as a neutral industry broker. Although our research has some limitations, these findings contribute to researchers of entrepreneurship and platform management as well as to practitioners, particularly those who desire to become platform leaders.

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