

6 OUT OF THE JAPANESE INCUBATOR

I-MODE AND THE INTELLECTUAL PROPERTY

IMPERATIVE

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Due to a critical mass of high-tech manufacturers and the resultant intensity of domestic competition, Japan has long been a hotbed of innovation in various manufacturing and services sectors. Yet despite this potential for domestic competition to fuel international competitiveness of locally developed innovations, many Japanese firms have faced difficulties in expanding operations overseas. While exports of technology-centric manufactures have achieved considerable success, process or knowledge-intensive exports of services that are reliant on tacit communication have been more problematic for Japanese firms, despite some innovative and efficient services sector operating in the domestic market. It is not surprising thus that this deficit in trade of services has contributed to the perception that Japan's only competitive sectors are in manufacturing. This lack of competitiveness has particularly been the case when it comes to reaping a return on the intellectual property component inherent in innovations in technology, processes, and business models or systems.

This comes despite Japan having been an exemplar throughout East Asia and the Pacific as an innovator across a number of industries. Many

economies in the region have long looked to Japan as the forerunner in innovations ranging from consumer electronics to automobiles, and from television programs to lifestyle goods. Yet despite this demonstration effect,¹ more intangible products such as television programs and business models have, in the past, either been imitated and adapted by local firms, or have not been exported for a number of reasons. In both situations, rents have not flowed back to Japan in an era when the economy needs to rely increasingly on its human capital and intellectual property.

In the field where telecommunications, consumer electronics, and media content converge, Japan has witnessed the unique success of mobile internet through the innovation of front-running mobile operator NTT DoCoMo and its 'i-mode' service, alongside rival services offered by KDDI and Softbank.² DoCoMo's i-mode is worthy of further investigation not only because of its unique success in Japan, when operators in other countries failed to launch a sustainable mobile internet service, but also because it provides a pertinent example of how a successful business model was licensed to mobile operators in countries around the world.

In the face of attempts at foreign direct investment in the US content business by Japanese consumer electronics manufacturers (Matsushita and Sony), this case highlights how Japanese firms are beginning to seek alternative revenue streams for exporting innovations not only in technological hardware and production processes, but in marketing and business model design.

The role of licensing such intellectual property has been cemented not only by the rise in recent years of licensing fees and royalties as a proportion of Japanese foreign earnings, but also by cogent Japanese government policies that recognise the value of building capacity for intellectual property creation and protecting the rights of intellectual property owners.

This chapter explores the unique success factors of i-mode, and, questioning its applicability outside of Japan, shows how DoCoMo went about licensing the business model after failed attempts at foreign direct investment. I-mode's international licensing may well be a harbinger for an increase in the licensing and export of a variety of Japanese innovations abroad that have the ability to transcend cultural specificities.

The i-mode model

Mobile internet technologies have had the potential to provide consumers with significant utility, given their ability to deliver information in a timely fashion, reduce transaction costs, and provide access to a wide variety of content. Yet until the now well-documented success of i-mode and mobile internet in Japan, mobile internet platforms in most developed countries had failed to capture consumer and industry interest. In Japan, however, mobile internet subscribers to the three major carriers' services had passed 70 million in May 2004, providing users, operators, and industry with a value-added communications channel. As of February 2007, subscribers had passed 83 million (Telecommunication Carriers Association 2007).³

Launched by NTT DoCoMo in 1999 to abate the slowed growth of the maturing mobile telephony market, i-mode began to garner attention from analysts, industry players, and academics outside of Japan when it attracted 10 million subscribers by mid-2000, and had 30 million subscribers by the end of 2001.⁴ This resulted in a plethora of news articles and research reports as well as a significant volume of academic articles (such as Devine and Holmsqvist 2001; Jonason and Eliasson 2000), which have continued into recent years as DoCoMo began to take i-mode overseas (for example, Peltokorpi et al. 2007; Lindmark et al. 2004).

Following this success, operators across Europe and Asia have signed licensing agreements with NTT DoCoMo to offer the i-mode service in their respective markets. Yet with subscriber growth from some of DoCoMo's European partners indicating mixed results, and some operators such as Telstra in Australia and O2 in the UK announcing in July 2007 their discontinuation of i-mode, can the fundamental business model evidenced in i-mode's success in Japan be replicated in other countries, or is it simply due to socio-cultural or industry characteristics in the Japanese market?

If i-mode can in fact be transplanted to other countries, it may well become an exemplar for Japanese firms licensing their innovations abroad, given that it represents a convergence of tangible goods such as electronics manufacturing and telecommunications hardware, with more intangible products including creative content, software and technological standards,

as well as marketing know-how and innovative business model design. Not only would the successful licensing of i-mode have positive spill-over effects on other Japanese firms, such as handset manufacturers and content providers, but it would also present an example of how intellectual property residing in a wide gamut of knowledge-based products can be exported.

Key features of the business model

DoCoMo's i-mode offers users (as do its rival services in Japan) an 'always on' dedicated email client and web browser by which they can access a variety of aggregated content, allowing them to browse news, check weather and train timetables, download music, buy plane tickets, update their blog, and interact with others on social networking sites. It provides a service for 'analogue' people rather than a gadget for technology enthusiasts (Matsunaga 2000).

The core of the i-mode business model can be described as creating a 'semi-open platform', that is with elements of closed, proprietary systems that offer structure and security, and open platforms that provide freedom of choice and interconnectivity (Johns 2003). The key elements to this platform are a collaborative business network between the operator and the handset manufacturer, the aggregation of content, a centralised payment mechanism, the separation between operators and content providers, freedom of access for users, and the increased connectivity these elements deliver.

Collaborative business network. The inter-firm relationships between DoCoMo (the network operator) and various handset manufacturers resulted in a highly reliable and functional technical platform. Handsets were tailored to the network operator's specifications, meaning there was no chance of incompatibility between handset capability and network-supported services. This stable operating environment was not achieved through vertical integration but through close cooperation between manufacturers, vendors, and network operators.

This 'single and indivisible relationship' (Natsuno 2000) between service provider (DoCoMo) and handset manufacturer has resulted in a win-win situation for both parties, as demand for new functions and services means an increased demand for new handsets that make these applications

possible. This increases the turnover rate of handsets and improves the profitability of both actors. Thus highly customised network-specific handsets produced by popular manufacturers became necessary in order for network operators to attract and retain subscribers.⁵

Behind the reliable user interface, building an interdependent relationship with handset manufacturers allowed for the easier deployment of standard technologies. I-mode's cHTML (compact Hypertext Markup Language) was a 'simple' solution in that being a subset of HTML made it more open and widely understood. By developing cHTML and associated transfer protocols, DoCoMo implemented a language that end-users and programmers were more likely to be familiar with, as it is the *de facto* internet standard (Lunn 2001).

Furthermore, this cHTML platform was implemented over a packet-based network rather than circuit-switching technology, giving users immediate access without the need to 'dial-up', and allowing for seamless movement between web and voice usage. It also made it easier for operators to charge users for the volume of information they downloaded, not the time they were connected.

Pointing to the success also enjoyed by rival services that use different technologies, some observers have questioned the role cHTML and packet switching played in i-mode's popularity (Lindmark et al. 2004). Yet other platforms (KDDI and J-Phone/Softbank) use different technology because cHTML was developed by DoCoMo. Without the large research and development budgets, these competitors used tweaked *de facto* standards or licensed technical solutions and packaged them in a way that ultimately replicated i-mode's functionality.⁶ As discussed later, the presence of a unique technology also has ramifications for the licensing of i-mode overseas.

Aggregating content. Acting as a content aggregator, DoCoMo provided access to a variety of 'official' content services through their 'iMenu' portal, affording users easy and timely access to a wide variety of content, while content providers were given easy access to markets. By restricting content that was placed on the 'iMenu', however, DoCoMo also played a monitoring role providing users with the assurance of quality. As the service provider, DoCoMo were ideally situated to play the role of aggregator between content providers and users.

Critically, the value of the i-mode services lies in the inherent market-making function of aggregation. DoCoMo do not create any content themselves, but rather organise third-party content into a user-friendly portal for users to access.⁷ Aggregating content services in a portal added structure to the platform by organising content and information, thereby reducing search and decision costs while improving quality of service. Starting with 67 content providers, i-mode's iMenu had 4,245 'official sites' as at June 2004. As of February 2007, there were over 8,430 official sites for 3G i-mode users (NTT DoCoMo 2007a).

Micro-payment mechanism. According to Natsuno (2000), it was difficult for content providers to receive benefits or revenue from internet-delivered information before the entry of i-mode. Adding a centralised micro-payment mechanism allowed small subscription fees for official content to be placed on users' phone bill rather than requiring them to use another form of payment such as credit cards or prepaid cards. Instead of paying tiny fees to various content providers, subscribers have their charges aggregated on their monthly bill by NTT DoCoMo, who collects fees on behalf of providers, taking a nine per cent commission from this revenue. DoCoMo also placed restrictions on pricing strategies of content providers, limiting them to between 100–300 yen per month (Matsunaga 2000).

Encouraging third parties to develop and provide content, and users to access this content saw i-mode act as a market-place intermediary. At a time when a lack of established payment mechanisms were causing problems for 'e-commerce' and 'm-commerce' (mobile commerce) alike, i-mode's payment system added a stable and secure structure to the mobile internet platform and allowed it to be used as a viable distribution channel without the need to create a direct billing relationship between users and content providers.

Despite its success, this concept is not completely revolutionary or unique. As Matsunaga (2000) points out, telecommunications carriers have long been a proxy for the collection of fees for premium telephone information services. Similarly, subscription television operators provide users with access to a bundle of channels, and then charge on behalf of the respective content providers.

Separation from content provider. Significantly, i-mode's evolution to an e-marketplace was encouraged by ensuring independence from content providers, which facilitated a more 'level-playing field' for potential suppliers, and signalled diversity of content for users (Johns 2003). In contrast to strategies exhibited in recent years by media and telecommunications firms such as AOL TimeWarner in the United States and Telstra in Australia, the success of i-mode was assisted by DoCoMo's decision to pursue 'arms-length' transactions with upstream content providers rather than securing exclusive rights for content. Independent content providers are therefore more likely to use the platform to distribute their content as they do not perceive DoCoMo to have a vested interest in promoting the content of affiliates above their own. DoCoMo profits from commission fees, an increase in traffic, and the launch of new services rather than from holding rights to exclusive or in-house content.

Freedom of access. The fifth element i-mode exhibits is the provision of a platform without restrictions. When first introduced, i-mode users were only able to access content on the official iMenu. It appears however, DoCoMo realised that its subscribers desired the freedom to access information and content from alternative sources, and the ability to create their own web sites. Therefore, even content providers who were not on the i-mode portal could use the platform to provide information to users or to distribute their content by writing their pages in cHTML. Users were not only able to access these non-official or 'independent' sites freely, but could also create their own web pages, which DoCoMo actively encouraged. This resulted in a greater critical mass of content, which improved the platform's attractiveness and also generated revenue for DoCoMo through data charges. As of June 2004, there were 77,550 independent sites created by individuals and 'non-official' providers (NTT DoCoMo 2004). In March 2007 this figure was estimated at over 107,000 (OH!NEW? 2007).

Connectivity. Finally, a cumulative result of these factors is the increased connectivity between users. The ability to send messages via email to both fixed and mobile internet devices gave users an inter-personal communication medium not just between users on the same network or

technology, but across platforms. Allowing users the freedom to access sites outside the i-mode portal provided an opportunity for self-expression and improved connectivity between users. The ability for users to create their own web pages and access those of other users resulted in a greater number of sites on the i-mode platform and facilitated community building and connectivity among users.

Hence, through this semi-open platform, i-mode reduced transaction costs, improved timeliness, and increased the value of aggregation for all participants in the value chain. Vishik and Whinston (1999) identified that aggregation of content results in a more structured, but not restricted, informational space. This appears to be the most crucial value-adding principle of the semi-open platform: to add structure but without restrictions.

Japan-specificity

Despite the key fundamentals of this business model, its transferability outside of Japan has often been questioned. Apart from the core business model, various Japan-specific factors seem to have contributed to the success of i-mode, which may limit its potential replication overseas. Many of these are well recognised. While fixed internet in Japan has now become one of the most competitive among OECD nations, evidence suggests that slow internet take-up during the introduction of mobile internet may have resulted in the absence of a comparable substitute. In particular, the legacy of telecommunications regulations had a lasting impact on the pricing and diffusion of internet services. Furthermore, the extent to which socio-cultural aspects such as commuting, and industry characteristics such as competitive media industries, contributed to the success of i-mode needs to be considered.

Low diffusion of personal computers. Despite Japan's high level of technological innovation, critics have referred to low penetration of personal computers in Japanese homes, schools, and offices during the early days of the internet (Gottlieb 2000).

The high price of portable laptop computers in Japan during the early days of internet growth discouraged their widespread use. This combined with the restricted living space in Japanese homes, which has arguably

driven much innovation in device convergence, consequently resulted in a lack of space for a dedicated PC fixture.⁸ Other demand-related arguments for low PC penetration in early years include difficulties in word processing in the Japanese language (Fransman 1999).⁹

On the supply side, the large sunk investments that many electronics companies had in antiquated word processor technologies may have resulted in their reluctance to abandon marketing these even after PCs had become commonplace in other countries.¹⁰ Alternatively, as Fransman (1999) argues, a *de facto* monopoly in the PC market held by NEC (who used their own standard rather than IBM-compatible hardware) caused the Japanese PC market to grow considerably more slowly than the United States.

High cost of telecommunications. Until regulatory reform in the 1990s, Japanese telecommunications fees had been among the highest in the world (Devine and Holmqvist 2001; Anchordoguy 2001). Regulations allowed the incumbent telecommunications carrier, NTT, to effectively own the ‘last mile’, or the final connection to every Japanese household (McNeill 2001; Mollman 2001). Having all calls terminating and originating on NTT wires, resulted in higher costs for users.¹¹ The persisting NTT subscriber bond system also meant that the actual purchase of the phone line may have been the biggest expense. This constituted a significant barrier to young people and lower income earners acquiring their own private communications channel, particularly during the dial-up internet era.¹²

The Japanese Government’s style of deregulatory policy also provided DoCoMo with the economic incentive to innovate. The deregulation of telecommunications resulted in the state monopoly NTT being broken up into regional and product-type companies such as NTT East and NTT West (fixed line), NTT Communications (long distance), and NTT DoCoMo (mobile). This separation of the mobile carrier DoCoMo was a key difference from most countries where incumbent networks faced the challenge of expanding mobile services without cannibalising fixed line revenues. Thus DoCoMo had a clear impetus for developing a highly competitive mobile phone service, particularly after the deregulation of the mobile telephony market in 1994.

Since the government implementation of stringent competition policy and the surge in broadband services—first via cable then in particular through ADSL (Asymmetric Digital Subscriber Line), Japan has seen dramatic increases in internet connectivity, with new market entrants being granted access to NTT's lines, and access rates fell dramatically. Data from 2002 suggests that Japan's ADSL packages consistently rank among the fastest and cheapest in the world.¹³ Some argue in addition that as Japan's internet connectivity was comparable to European countries such as France, it cannot be considered as a key factor in i-mode's success (Funk 2001; Lindmark et al. 2004). Yet France also experienced below average connectivity, often attributed to sunken investments in home-grown Minitel technology (see Brousseau 2003).

While mobile telephony in Japan appears to have offered an alternative to fixed line, Funk (2001) rightly questions the degree to which mobile is a substitute for fixed internet. Despite the above discussion on the comparative attractiveness of mobile internet, it would not be accurate to say that Japanese consumers 'prefer mobile to fixed internet', or that their 'first online experience was on mobile not fixed internet'. Mobile internet (and telephony in general) also has a complementary relationship to fixed line, and neither can be said to be direct substitutes for the other, even if substitution does occur at some point. Despite current high levels of fixed connectivity, mobile internet remains popular, as it has evolved as a discrete value-added service. There are, however, socio-cultural factors that also need to be considered.

Commuting. The long commuting hours of Japanese have often been raised as a reason for the success of mobile internet (Jonason and Eliasson 2000). This travel time gives subscribers pockets of time during which they could access information and entertainment in a timely fashion (Lunn 2001). Moreover, it is possible that this reliance on and dependability of public transport initially increased the demand for mobile telephones. The necessity of commuting meant that people were both uncontactable at home or office for long periods, and were also left with time to fill.

Funk (2001) and Lindmark et al. (2004) suggest commuting time is irrelevant to the success of mobile internet in Japan, suggesting other developed nations may have equally utilised public transport systems. Yet

many nations do not rely on public transport to the extent that Japan does. In Australia, for example, the comparative lack of people relying on public transportation is obvious, with just 12 per cent of the population commuting by train or bus to work in 2000 (Australian Bureau of Statistics 2000).¹⁴ Importantly, it is not just the high usage of public transport, but also the exceptionally crowded commuting environment on public transportation in Japan that spurs the need for a compact channel for communication and entertainment.¹⁵

Timeliness and connectivity premium. As a result, a need for a mobile communication channel emerges, which will allow users to remain connected to their associates. Mobile telephony, and mobile internet, satisfy this need to be connected, which may in fact be more pertinent in Japan than in other countries. The improved interconnectivity of adding email to mobile phones added value that users in other countries would be unlikely to experience, given that text messages in Japan could only be used between users on the same network.

Likewise, a premium also appears to be placed on timeliness. As Ariga (1996:120) argues, the ‘condensed society’ aspect of Japan has spurred several ‘time-saving’ business opportunities that have resulted in innovative and efficient uses of time and space.

Vibrant content market. These pockets of time have resulted in an increased demand for media products such as newspapers, magazines, comics, and books. An important aspect of Japanese society is the sheer volume of information and the amount of time people devote to consuming it (Ariga 1996). Supply-side, the scale of Japan’s media content industries is considerable. According to METI estimates, the broader content industry is worth 11 trillion yen, making it twice as large as the iron and steel industry and approximately half the size of the automobile industry (JETRO 2005).

Domestically, Japan has the second-largest national broadcaster and one of the largest publishing industries in the world (Tanaka 1998). Furthermore, Japan’s circulation of daily newspapers is by far the largest in the world (Ariga 1996:128). Notably, half of all books published in Japan are pocket-sized paperbacks, indicating a tendency for consumers to carry books and read them when they have available pockets of time.

Magazines likewise, share the pocketbook's portability; the printing of magazines vastly outnumber the printing of books (Tanaka 1998). Given their popularity, i-mode services were designed to replicate magazines rather than fixed internet offerings (Matsunaga 2000). Again, commuting on public transport and the resulting pockets of time has undoubtedly fuelled demand for portable, informative, printed media products, and in doing so increasing this very readership.

Known in many western countries for *anime*, *manga*, and computer games, Japanese content is also well known throughout East Asia, which has long been a recipient of Japanese programming (Kawatake et al. 1996). Over 60 per cent of the animated cartoons broadcast around the world are made in Japan, with Japan's US-bound exports of animation alone being estimated at US\$4.35 billion, while in East Asia 4 billion yen was generated in license sales and over 80 billion yen in sales of original manga comics (JETRO 2005).

Exportability of the model

Essentially, the i-mode model provides an end-to-end solution for device, content, delivery, and billing. The business model's semi-open nature brought structure in the form of a reliable technical platform, aggregated content and billing from subscription broadcast business models, and reduced restrictions by delivering the service across an open internet network that allowed users freedom of access and self-expression while maintaining significant separation from content providers.

While the semi-open platform evidenced in the i-mode business model is not characterised by any overt cultural specificities, its successful implementation will be affected by the unique features of individual markets. The exportability of the model, and hence DoCoMo's ability to earn money from licensing and royalty payments, also depends on its ability to have the value-added components of the business model recognised as proprietary intellectual property.

DoCoMo's forays in foreign markets. DoCoMo's initial strategy to spread their i-mode service and third generation W-CDMA standard was through direct equity investments during the mobile telecommunications 'bubble', which came at a serious cost. In 2001, DoCoMo wrote off US\$7.7 billion

of its overseas investments, and by late 2002, had decided to write down a further US\$4.6 billion on investments in AT&T Wireless, Hutchinson 3G UK (“3”), and KPN Mobile.

DoCoMo sold its shares in AT&T Wireless to Cingular, and also sold its 20 per cent stake in “3” back to Hong Kong’s Hutchinson in 2004 when Hutchinson failed to adopt i-mode as its content service for its “3” mobile network in the UK. Hutchinson’s rival operator O2 launched their UK and Ireland i-mode service in 2005 after signing an agreement with DoCoMo in 2004.

Licensing to operators. Despite this series of strategic errors, DoCoMo continues to add to its list of overseas operators who are adopting i-mode. While it has invested in operators such as KPN in the past, DoCoMo appears to believe that the way to achieve less capital-intensive growth is through licensing its technology and business model rather than through direct equity investments.

The current list of i-mode licencees now includes KPN Mobile (Netherlands) and its subsidiary E-Plus (Germany), Telefonica (Spain), BASE (Belgium), Bouygues (France), Wind (Italy), Cosmote (Greece and Romania), O2 (UK and Ireland), Telstra (Australia), Far EasTone (Taiwan), Star Hub (Singapore)¹⁶, Mobile TeleSystems (Russia and CIS), Cellcom (Israel), with Hutchinson Mobile (Hong Kong and Macau), Hutch (India), GloBul (Bulgaria), and SMART (Philippines) planned to launch services in 2007 (NTT DoCoMo 2007b).

Lacklustre subscriber figures outside of Japan have fuelled scepticism about i-mode’s transferability and the ability of DoCoMo to license the technology overseas (*The Times* 2007).¹⁷ The willingness of mobile operators to license i-mode may be questioned if i-mode were to be perceived as ‘out-dated and easy to copy’. Despite the decisions of Telstra and O2 to drop the service in favour of their own 3G substitute, operators continue to sign up to carry i-mode with StarHub joining in 2005, GloBul in 2006, and Cosmote Romania, Hutchinson Mobile, Hutch, and SMART in 2007. Further, the willingness of these non-equity partners provides greater evidence of market support for i-mode rather than it being implemented by operators with which DoCoMo has direct equity investments.

As indicated above, the business model of aggregating content and payments is not as revolutionary as is its application in mobile internet markets. While licensing a technology has a more 'tangible' value proposition and historically has had clearer recourse for litigation of infringement, providing a 'technological' solution several years after its development may in fact have been detrimental to DoCoMo's attempts to license i-mode in developed nations. Yet the existence of a proprietary technology is particularly important for earning revenue from an innovation if the brand holds little value in the new market or the business model is easy to replicate.¹⁸ This, combined with a business model that includes operator-driven handset specifications as an integral part of its success, offers significant value to offer potential licensees, even if they choose not to use the 'i-mode' brand, as did Telefonica in Spain. If O2 decides to go ahead with the launch of i-mode in Germany it is certain to be implemented under a different brand name, given that their competitor E-Plus is currently providing an internet service in the German market with the i-mode brand.

Barriers to exportability. One of the major differences likely to be encountered, technological differences aside, is the lack of the close relationship with handset makers. While there may be resistance from operators in assuming risk and from users in purchasing a network-specific handset, the absence of this collaborative relationship and operator-specified standards, this may inversely represent an opportunity for Japanese handset manufacturers to expand overseas. Many Japanese handset makers have had difficulties breaking into overseas markets, not just due to technological differences but also because of the intensity of the competition in the Japanese market. Mobile handsets have been somewhat of an anomaly in the expected pattern of industries that experience strong competition domestically being competitive in international markets. Intense competition combined with operator-controlled specifications in Japan arguably constrained manufacturers from expanding into overseas markets. Japanese makers therefore stand to do well with i-mode's expansion, as evidenced by the number of handsets NEC and other makers are adapting for overseas markets.

The second potential difference in host countries is the relationships that exist between network operators and content providers. In some European countries, the United States, and Australia, the tendency for operators to enter into exclusive agreements with content providers in order to secure content for the platform threatens to undermine a key factor of the semi-open i-mode model. Where there is a perceived lack of supply, operators may be tempted to provide content themselves or to enter into exclusive relationships with preferred providers. The need to keep the platform open to innovative providers of content may represent one of the biggest challenges to i-mode's transferability.¹⁹

Thirdly, given the high diffusion of prepaid mobiles (rather than the predominant post-paid contracts in Japan) i-mode billing systems would need to be adjusted to incorporate prepaid users. Overseas operators are also likely to see i-mode as a way to get prepaid users to move onto contracts, although KPN's i-mode offerings in the Netherlands and Germany appear to be available to their prepaid users.²⁰

Regardless of socio-cultural differences such as commuting and high consumption of information, the business model seen in i-mode appears to be replicable outside of Japan, provided it can meet specific market needs.

Intellectual property and policy implications

This instance of DoCoMo exporting i-mode is a pertinent example of both the potential for, and the visible trend towards, Japanese firms exploiting the value of their intellectual property overseas. Just as NTT DoCoMo developed i-mode out of the need to catalyse further growth in a maturing mobile telephony market, Japanese policymakers are similarly looking to intellectual property as a key to revitalising the economy and maintaining Japan's competitiveness. This realisation of the importance of intellectual property in the economy has been underpinned by a sense that prevailing industry and policy settings in Japan have not allowed firms to fully exploit the internationalisation of their intellectual property.

While i-mode provides an instance of exporting Japanese technology and business models, the trade in television program formats offers another example of the dynamics of licensing intellectual property innovations

outside of Japan. While TV program exports account for only a small amount of content exports according to METI data, it provides another example of the ability to use the intellectual property inherent in products and allow them to be adapted to local markets rather than exporting ready-made products.

The expansion of exports in other IP-based sectors

As mentioned above, Japanese programming has been exported to Asia for several decades, as has Japanese animation been sold around the world. While programming exports doubled over the 1970s to reach 4,500 hours in 1980 (Hagiwara 1995a), this figured had increased four-fold to over 19,500 hours by 1992 (Kawatake et al. 1996), indicating the exponential growth in exports, of which 58 per cent was animation. Yet METI figures estimate the value of television program exports at 5.3 billion yen in 2001, compared with 253 billion yen for game software (Hasegawa and Midorikawa 2005). Historically, Western Europe, Asia, and North America have been the largest regional markets for Japanese programming, with the largest single markets being the United States, Spain, and Hong Kong (Kawatake et al. 1996).

While there is a growing market for Japanese content, particularly with the rise of the 'Cool Japan' discourse (see McGray 2002), audiences tend to prefer local content (Hagiwara 1995b). Despite the 'cool Japan' phenomenon, an inability to adapt programs, particularly the language, is likely to reduce exportability. Furthermore, given that many nations still impose local content requirements on broadcasters, the demand for licensing innovative program formats is bound to be particularly strong. Similarly, linkages or vertical integration with local production companies may mean broadcasters prefer to produce local content rather than paying a premium for successful foreign content. Licensing formats rather than exporting programs allow local production companies to use local talent to produce content tailored for the local market and pay the Japanese originator a licensing fee.

The *Iron Chef* television program, for example, which is broadcast in 11 countries around the world (JETRO 2005), has begun licensing the program's format to overseas broadcasters and production companies. The

US remake of the show is now exported to other English-speaking countries. Similarly, ADV Films in the US announced plans for a live-action version of Japanese anime *Neon Genesis Evangelion*, while the Resident Evil series of movies has been taken from the Japanese computer game of the same name (known as Biohazard in Japan).

Japanese television industries have been recognised as having an influential role in circulating and adapting content in East Asia (Keane 2006). Yet there has been a trend in the past, prevalent particularly in Asia, for copyright holders to see their revenues 'eroded' both by piracy of their original content, and imitating of (or borrowing from) Japanese-originated formats. In the music industry, for example, pirated copies of Japanese content accounted for 17 per cent of the music software market in Hong Kong and 32 per cent of the market in Taiwan, according to a 2002 survey by the Copyright Research and Information Center (JETRO 2005). While this infringement of copyright may have ancillary benefits in other areas of the Japanese economy,²¹ rents accruing to the content sector itself may be difficult to extract, either from the export market or from domestic industries that benefit from the unauthorised use of content.

There is a growing imperative to be able to repatriate rents from these innovations. This need is not only limited to content-based goods, but extends to all sectors of the Japanese economy that have an inherent intellectual property component to their products. For Japanese firms, however, it has been easier to identify, protect, and sell a tangible product such as an automobile part in international markets than it has an intangible good such as content or a business process. While there has been no shortage of innovations being cultivated in Japan, firms have often fallen short in their ability to exploit this intellectual capital overseas.

Character licensing has also seen considerable growth, and for some examples of media content, has earned copyright owners more revenue than has sales of the original content itself. *Pokemon* provides an example where a computer game also spawned a movie with 22 billion yen box office takings, and 700 billion yen from merchandising (METI figures in Hasegawa and Midorikawa 2005). The ability for intellectual property rights to be assigned to other formats, and bought and sold, indicates not only the significant potential in scope economies, but also the need for

human resources that can exploit the international expansion of content, whether it is for information, education, or entertainment.

Policies to strengthen Japan's intellectual property standing

The intellectual property imperative. Rather than simply evidencing a 'hollowing out', the established trend of manufacturing shifting offshore suggests that Japan's competitive advantage lies in innovation and the development of intellectual property rather than in retaining lower-end manufacturing. Yet Japan has often had difficulty reaping the returns on its investment in intellectual property. Comparative studies, for example, indicate that while intra-industry research and development knowledge flows and spill-overs are greater in Japan than in the United States, the ability to appropriate rents from innovation has been less (Cohen et al. 2002).

It is likely therefore that a lack of capacity to protect and exploit these innovations has resulted in Japanese firms being unable to extract sufficient rents from intellectual property. This may be due to a misuse of IP by third parties, an insufficient legal framework, or the absence of professionals who are able to market intellectual property services, manage intellectual property rights, and deal with the litigation of intellectual property infringement.²²

Japan's intellectual property strategic program. The plan for the Japanese Government to play an active role in boosting Japan's ability to exploit its intellectual property status in the world was evidenced in February 2002 with Prime Minister Koizumi's 'intellectual property super-power' speech. Since this public expression of policy intent, the government has moved with unprecedented speed in establishing a series of intellectual property-related policies (Hatakeyama 2005). The government's 2004 intellectual property Strategic Program pointed to the need to expedite Japan's transformation into an intellectual property-based nation 'by making the best use of intellectual property as a source of national wealth including patents, know-how, and content such as movies and game software' (IPSH 2004). Two years on, the program was intending to make Japan 'the most advanced intellectual property-based nation in the world' (IPSH 2006).

The Intellectual Property Strategy Headquarters (herein IPSH) was created in 2003 under the Cabinet Office.²³ Its annual whole-of-government strategic programs specify agencies and ministries to carry out action items, which aimed to develop local capacity for creating and commercialising intellectual property, and to strengthen intellectual property protection regimes. These documents demonstrate that policymakers have recognised the necessity of capacity building and plan to achieve this through a multitude of policies that promote the ‘creation’ of intellectual property, the ‘protection’ of intellectual property rights, and the ability for firms to ‘exploit’ the intellectual property developed in Japan both domestically and abroad.

On the ‘creation’ front, the government’s 2006 Strategic Program aims to revitalise universities and improve their international competitiveness, to improve the mobility and diversity of researchers, and to promote research and development at universities that focuses on intellectual property creation (IPSH 2006). A significant volume of literature has focused on the poor standing of Japanese universities on the world scale, particularly at the graduate level, that need not be revisited here. But it is also recognised that a significant proportion of the patentable scientific research is conducted at universities, and the ability to allow the private sector to tap these innovations appears to be one area of the government’s strategy.²⁴ Universities also provide an ideal environment to act as incubators as students who have acquired relevant skills prepare to make the move into the industry. Relaxing the rules for universities to increase the industry-specific skills at a post-graduate level for professionals has seen the rise of new universities such as Digital Hollywood, an industry-driven school that teaches students the skills to become digital content experts, particularly in games and animation.

The Program includes strategies to bolster ‘protection’ through an improved intellectual property legal framework. Some of the key policies to advance this protection are the strengthening of domestic and international legislation, and the monitoring of counterfeit goods and patent, trademark and copyright infringement. In April 2005, the Intellectual Property High Court was established to give Japanese firms

streamlined access to litigation and faster resolution of IP disputes.²⁵ Given the well recognised lack of practising lawyers in Japan, the 2004 Program also calls for an increase in IP lawyers, to be actualised by doubling the bar exam pass rate by 2010 (IPSH 2004).

On the international front, where patent and copyright infringements are believed to considerably reduce the earning potential of Japanese firms, the government is making efforts in both multilateral forums such as the WTO, APEC, and WIPO and bilaterally with individual governments. An IPSH plan for the prevention of counterfeit and pirated goods called for a system to be established by 2005 whereby rights holders in Japan can file intellectual property rights complaints directly to the attributable countries (IPSH 2004b). Making particular reference to counterfeit and pirated goods providing funding for criminal and terrorist groups, the 2006 Program designated action agencies to cooperate with international organisations to prohibit the import of counterfeit goods.

With regard to the lack of 'exploitability', it appears there is a tendency for companies to file for patents in order to defend rather than utilise their intellectual property. The 2006 Strategic Program indicates that more than half of registered patents are not being exploited. While little data is provided in the policy statements, it has prompted the government to move to revise patent laws with the aim of allowing these innovations to be utilised rather than being no more than a listing in the Patent Office directory. Alongside this, the government plans to support international standardisation activities. Also of importance is the mention it makes of allocating resources to supporting SMEs and ventures, given their important role in innovation but their lack of resources to develop and exploit their intellectual property. While this may sound ominously like government helping larger firms to 'exploit' the intellectual property from SMEs and start-ups, the Program points out the latter's need for well trained and informed IP professionals including lawyers and consultants.

This exploitation is inextricably linked to the policy documents' concept of creation. Yet it is important for policy to focus on capacity building through the removal of cumbersome regulations combined with the development of human capital that has skill-sets to take intellectual property into the international market. While policy settings appear well-placed,

there is always a danger that a policy focus on the 'creation' of intellectual property may result in either subsidies for industry on the one hand, or the government taking an over-active role in determining the allocation of private capital investments on the other.

Increases in royalties and licence fee receipts. As described earlier, this fervent policy activity has been contextualised by recent balance of payments data showing a surplus in royalties and licence fees. While still indicating a trade in services deficit on the current account, Japan's net balance for royalties and licence fees has been increasing since 1993, posting its first surplus in 2003. Since then, the item has been increasing by approximately US\$1 billion per year, and at 2006 stood at a US\$4.69 billion surplus according to balance of payments data from the Bank of Japan. While this is a clear indication of Japan's move towards exporting IP rather than just manufactures, it does not necessarily suggest that intellectual property-based services and content sectors are internationally competitive.

Rather, data from the Bank of Japan suggest that strengths in the manufacturing sector accounted for a large share in trade in services exports. In fact, the majority of the royalties and license fee surplus until 2005 has been attributed to strong overseas sales in these sectors, particularly automobiles and electric machinery (Bank of Japan 2006). In an analysis of 2003 trade in services data, Yamaguchi (2004) suggests these large increases in receipts have mostly been comprised of payments for trademarks and technical instruction from overseas subsidiaries of Japanese companies, rather than from licensing intellectual property to third parties.

Receipts from industrial property rights (particularly automobiles, electronics, and other industrial firms) have been in surplus since 1997, and stand in stark contrast to trade in copyrights (film, television, publishing, music), which have been in constant deficit (Bank of Japan 2006). Despite the large scale of domestic content industries, copyright payments have been around US\$5 billion, compared to US\$900 million in receipts, a deficit which, according to Yamaguchi, has mostly been comprised of computer-related software licensing from the United States. Literature, music, and arts comprise only 10 per cent of the deficit, according to Yamaguchi (2004). METI data from 2001 corroborates this

deficit in the trade of most items: music, broadcast programs, publishing, and movies. Yet receipts from exports of game software, at a 250 billion yen surplus, would appear to negate the deficits in all other content areas.

Content industry-specific policies

While promoting the potential of the content industry, the Japanese Government appears to be well aware of the terms of trade in this sector. The 2004 intellectual property Strategy document, stated that 'intellectual property contents (works such as movies, music, animation, and game software) created in Japan are highly acclaimed throughout the world, but we cannot say that the parties concerned have made concerted efforts to develop the content business under a common philosophy' (IPSH 2004:112).

Evidently, this effort to encourage the industry to be more 'proactive' is based on both the large deficit in the trade of copyright goods, and the content industries in Japan accounting for a smaller share of GDP (2.3 per cent) than the global average (3.3 per cent). Further, with Japan's share in the worldwide content market at just three per cent in 2000 compared to the United States' 17 per cent, digital content and pop culture are increasingly being viewed as sources of potential high growth and competitive advantage within Japan (*Nihon Keizai Shimbun* 2005). Hence, the desire of the government to encourage actors in the content industry to actively increase exports is understandable.

Strategic policy objectives for content promotion. The Japanese Government has realised, albeit belatedly, the nascent value in Japan's content-related business, and may well have taken its cue from external forces signalling an interest in Japanese content (JETRO 2005; McGray 2002). The government's interest in the industry appears to stem from three sources.

First is the economic value of the industry itself. Given the domestic industry's scale being situated between steel and automobiles, the sector's contribution to the economy is clearly evident. Yet, its size also highlights the lack of success in exploiting these goods in international markets, which current Japanese IP policy is attempting to resolve.

Second is the potential for spill-overs to other sectors of the economy. As indicated in both the discussions of the i-mode model and the export of television formats, content not only lends itself to be exploited in other formats, but also fuels the consumption of complementary goods such as mobile handsets and other hardware. Further, digital content often finds applications in other industries as diverse as mining and aerospace for purposes such as exploration and training.

Third is the 'soft power' benefits derived from exported content giving overseas consumers a positive impression of Japan. The 2004 IP Strategic Program makes an explicit reference to soft power benefits, and the government may well hope that exporting content will improve the image that residents of other countries have of Japan. This would have both political public diplomacy benefits as well as the potential to make these people more likely to purchase other goods from Japan, whether electronics, automobiles, or inbound tourism.²⁶ Among other factors however, this is contingent on the type of content being exported from Japan, and its ability to make a 'positive' impression.

Content promotion act. In June 2004, the 'Content Promotion Act' was passed in the Japanese Diet, which applied to the content industry the same goals of promoting the creation, protection, and exploitation that guided Japan's general intellectual property strategy. This includes efforts by national and local governments to develop talent, as well as promoting the fair trade and ownership of copyrights.

According to the 2006 Strategic Program, this Act required the reinforcing of the anti-monopoly law and the revision of copyright laws to allow copyright holders to use the internet to exploit the potential of their content. On the investment front, the Act seeks to increase the available capital to the industry by changing investment laws to limit the liability of investors, and also by providing investment incentives to catalyse private sector funding. On the users side, the government pledged to explore flexible pricing systems for the sale and resale of content such as music (CDs), a marked change from the traditional standardisation of prices for content such as books and CDs.

Policy implications. The strategic program appropriately addresses the need to develop creative capacity both on the production side and within the education system to turn out graduates that can function in the global economy and sell intangible products overseas. Content providers, whether for television programs or mobile internet sites, face the challenge of not only language barriers from users (having to translate content) but also linguistic limitations of explaining the benefits of these intangible goods to potential buyers overseas. The government policy's emphasis on the need to bolster protection of intellectual property and create more spaces for intellectual property professionals, including lawyers, is also well placed.

When it comes to protecting the intellectual property inherent in content and exploiting its secondary use, copyrights are already an established system. Yet the ability to prosecute those who infringe copyrights overseas has been difficult. There does, however, appear to be a turnaround in the *status quo* that has prevailed until recently.

Firstly, governments around the East Asian region realise that they need to police intellectual property-related crimes such as piracy conscientiously if they are to successfully induce foreign direct investment in these sectors. Singapore's stringent efforts to provide protection to copyrighted works through prohibiting their illegal production and sale, for example, has undoubtedly been fuelled by its free trade agreement with the United States.

Secondly, Japanese copyright holders have become more proactive in representing their rights overseas. This has been most recently seen in the JASRAC and YouTube incident, where the Japanese copyright management organisation threatened legal action if the YouTube owner (Google) did not take measures to prevent users from posting animation and other video clips managed by JASRAC on the site. Despite the potentially positive effect that YouTube videos of Japanese copyrighted content may have for the industry, international IP agreements concluded by the Japanese Government at both bilateral and multilateral levels will undoubtedly support claimants such as JASRAC in protecting unauthorised use of Japanese IP. It is unfortunate for all parties involved that JASRAC could not see the free promotional role that YouTube could have had for its clients' content. It is likely however, that JASRAC may pursue some advertisement revenue-sharing deal with YouTube in the future.

Conclusion

DoCoMo's exporting of i-mode and the licensing of television formats are exemplars of the potential for Japanese firms to exploit the value of their intellectual property overseas. Whether i-mode will be successful in particular foreign markets will depend significantly on the receptiveness of host country industry players to the semi-open platform model. This i-mode model also has the potential to be an impetus to innovation in the creation and delivery of local content in respective markets. These benefits, and the promise of spill-over effects to other technology and content sectors in the economy, illustrate why the Japanese government is keen to have Japan migrate to the status of an 'intellectual property super-power'. This would see Japan exporting models of innovation systems that are consistent with the production of local cultural innovation.

While the government has neatly defined its strategic policy into promoting the creation, protection, and exploitation of intellectual property, the imperative to develop creative and internationalised talent suggest that policies directed toward 'creation' must be aimed at capacity building through human capital formation and modernising the intellectual property legal regime. A key lesson from 'cool Japan' may well be that open networks of well-trained creative individuals and private content enterprises are the real drivers of intellectual property development. The optimum role of the Japanese Government and of those hoping to learn from Japan is to provide an institutional framework that allows the nurturing of creativity, the freedom of private capital, and the internationalisation of training institutions.

Notes

- 1 While these demonstration effects are implicit across various industries throughout East Asia, official government policies in South East Asia such as *Learn from Japan* in Singapore and *Look East* in Malaysia clearly reveal the Japan's role of knowledge disseminator in the region (Atarashi 1984).
- 2 NTT DoCoMo is a publicly listed subsidiary of NTT Holding Company and was the incumbent mobile carrier before deregulation introduced competition. KDDI was formed from a merger between former public monopoly international telecom company KDD and mobile carriers DDI and IDO. Softbank's mobile service was formerly known as Vodafone and J-Phone reflecting the majority shareholder at the time.

- 3 Subscribers to mobile internet as separate to mobile phones are possibly becoming less relevant as a statistic in Japan as service subscription becomes standard.
- 4 As of February 2007, i-mode subscribers in Japan were at 47.3 million (NTT DoCoMo website).
- 5 However, this absence of handset portability gives rise to certain switching costs for the user. While mobile number portability has been introduced in Japan as recently as 2006, handsets are still network-specific in contrast to services in many other countries where handsets come equipped with interchangeable SIM cards. Users can now port their number to another network but not their handset.
- 6 KDDI's use of HDML, for example, was built off an early version of WAP developed by the company Phone.com (Devine and Holmqvist 2001).
- 7 DoCoMo have more recently announced some capital tie-ups with some content firms such as Kadokawa Group (NTT DoCoMo Press Release 2006)
- 8 Ariga (1996) indicates that average Japanese homes have 60 per cent of the living space of US homes.
- 9 Natsuno (2000) also suggests low diffusion of PCs was due to a traditional belief in Japan that as language is expressed by people, characters should be handwritten, even in business circles.
- 10 Gottlieb (2000) offers figures indicating 1994 was the first year PCs outsold the now antiquated word processors.
- 11 Prior to the introduction of ADSL and FTTH (fibre to the home) timed local calls constituted a further cost to users in Japan.
- 12 This system which has been in place since post-war era, originally required subscribers to pay 100,000 yen to NTT as a bond, which would be returned after 10 years. The subscriber bond system was officially abolished in 1982 according to Anchordoguy, yet various special bond systems and installation fees raised the cost of purchasing a phone line (Anchordoguy 2001). In reality, the bond (*kanyuken*) still exists, requiring a fee of less than 70,000 yen. This *kanyuken*, or 'right to use a phone line', can be bought cheaper on secondary markets. NTT now offers access through a 'lite plan' without the bond, although ongoing charges are slightly higher (as of 2004–5).
- 13 The Ministry of Internal Affairs and Communications (then Ministry of Public Management, Home Affairs, Posts and Telecommunications) released figures indicating that as of May 2004 32 per cent of Japanese household had broadband internet connections. Furthermore, according to InfoCom Research Inc. in the two years between 2000 and 2002, the available connection speed increased eight fold and the price halved, offering speeds unavailable even in the United States and South Korea.
- 14 This low figure of public transport commuters (which can be assumed to be concentrated in major cities) contrasts with more than 76 per cent of people using personal automobiles to commute (Australian Bureau of Statistics 2000). Japan census data from 2000 meanwhile indicates at least 26.4 per cent of people commute via public transport, increasing to over 57.8 per cent in Tokyo.
- 15 Funk argues that i-mode take-up in rural areas (with less public transportation) has been on par with that in urban areas. While this assumes that residents in rural areas are not commuting longer distances by public transport, it also ignores the tendency for fixed internet penetration, a possible substitute to mobile internet, to be lower in less urbanised areas. On a cross-national level, data supports the correlation between urbanisation and

- fixed internet take-up. Controlling for per capita income, a regression of 2004 raw data from World Development Indicators yielded an R-squared of 0.915 (significant at 95 per cent confidence interval) when using urban population as an analytical weight.
- 16 While DoCoMo has no major equity investments, NTT Communications is a substantial shareholder of StarHub.
 - 17 I-mode subscribers outside Japan were at 6 million as of March 2007 according to DoCoMo (NTT DoCoMo 2007b)
 - 18 While the 'i-mode' brand has received considerable attention from industry, analysts, academics, and policymakers, the average consumer in most countries outside of Japan would not be expected to know much about i-mode. The i-mode brand, therefore, may bring little weight to the licensing agreement. Similarly, while the model of aggregating third party content and providing centralised billing services was a DoCoMo-led innovation for mobile internet, the business model itself is not revolutionary, having been used in various forms by subscription television broadcasters.
 - 19 This may be addressed to some extent by using foreign content (assuming no language barrier exists) or encouraging user-made interactive content.
 - 20 This existence of prepaid offerings is based on information available on web sites of European operators licensing i-mode.
 - 21 Pirated VCDs of the TV drama *Hero* starring Takuya Kimura in China are said to have fuelled rapid sales of Japanese-made mobile phones (JETRO 2005).
 - 22 Alternatively, it may suggest that intra-firm knowledge transfers are more commonplace amongst Japanese firms
 - 23 At the time of its establishment, its English name was the Intellectual Property Policy Headquarters (IPPH).
 - 24 A key government strategy to achieve this is the establishment of Technology Licensing Organisations.
 - 25 From the Intellectual Property High Court website, it appears to deal mostly with domestic copyright infringement litigation and firms appealing patent rulings.
 - 26 Given that tourism is a major contributor to Japan's deficit in trade in services, the government may find this argument particularly appealing.

References

- Anchordoguy, M., 2001. 'Nippon Telegraph and Telephone Company (NTT) and the building of a telecommunications industry in Japan', *Business History Review*, 75(Autumn):507–41.
- Ariga, M., 1996. 'Seven crucial viewpoints to understand the Japanese consumer', in S.M. Leong, S.H. Ang and C.T. Tan (eds), *Marketing Insights for the Asia-Pacific*, Heinemann, Singapore.
- Atarashi, K., 1984. 'Japan's economic cooperation policy towards the ASEAN Countries', *International Affairs*, 61(1):109–27.

- Australian Bureau of Statistics, 2000. 'More hazardous waste ending up in household bins', Media Release, 29 November Canberra. Available from <http://www.abs.gov.au>.
- Bank of Japan, 2006. *Japan's Balance of Payments for 2005*. Available from <http://www.boj.or.jp/en/type/ronbun/ron/research/data/ron0608a.pdf> (accessed 30 March 2007).
- Bickers, C., 2001. 'The way of the mobile warrior', *Far Eastern Economic Review*, 164:46–50.
- Brousseau, E., 2003. 'E-Commerce in France: did early adoption prevent its development?', *The Information Society*, 19(1):45–57.
- Cohen, W.M., Goto, A., Nagata, A., Nelson, R.R. and Walsh, J.P., 2002. 'R&D spillovers, patents and the incentives to innovate in Japan and the United States', *Research Policy*, 31(8–9):1349–67.
- Devine, A., and S. Holmqvist, 2001. 'Mobile Internet Content Providers and their Business Models', Masters Thesis, The Royal Institute of Technology, Stockholm (unpublished).
- Fransman, M., 1999. 'Where are the Japanese?: Japanese Information and communication firms in an internetworked world', *Telecommunications Policy*, 23:317–33.
- Funk, J., 2001. *The Mobile Internet: how Japan dialed up and the West disconnected*, ISI Publications, Hong Kong.
- Gottlieb, N., 2000. *Word Processing Technology in Japan: Kanji and the keyboard*, Curzon, Richmond.
- Hagiwara, S., 1995a. 'Rise and fall of foreign programs in Japanese television', *Keio Communication Review*, 17:3–26.
- , 1995b. *Gaikoku seisaku no terebi bangumi nitaishuru nihonjin no taido* [Japanese attitudes towards foreign television programs] *Mass Communication Research*, 47:180–94.
- Hasegawa, F. and Midorikawa, K. (eds), 2005. *Contentsu bijinesu ga chiiki wo kaeruf* [How the Content Business Can Change Regions], NTT Publishing, Tokyo.
- Hatakeyama, K. (ed.), 2005. *Odoru contentsu bijinesu no mirai* [The Future of the Chaotic Entertainment Content Biz], Shogakkan, Tokyo.
- InfoCom Research Inc, 2002. *Joho tsushin outrukku 2003* [Information Communications Outlook 2003], NTT Publishing, Tokyo.

- Intellectual Property Strategy Headquarters (IPSH), 2004. *Intellectual Property Strategic Program 2004*, IPSH, Tokyo. Available at www.ipr.go.jp/e_material/ip_st_program2004.pdf (accessed 28 October 2006).
- , 2004b. *Counters to Accelerate Measures against Counterfeiting and Piracy*, IPSH, Tokyo. Available from <http://www.ipr.go.jp/suishin/041216mohou-e.pdf> (accessed 21 March 2007).
- , 2006 *Intellectual Property Strategic Program 2006*. Available from http://www.kantei.go.jp/jp/singi/titeki2/keikaku2006_e.pdf (accessed 10 March 2007).
- Japan External Trade Organisation (JETRO), 2005. *'Cool' Japan's Economy Warms Up*, available from http://www.jetro.go.jp/en/stats/survey/surveys/20050509_cool_japan.pdf (accessed 12 December 2006).
- Japan Ministry of Public Management, Home Affairs, Posts and Telecommunications, 2004. *Update on broadband internet subscribers in Japan*, Government of Japan, Tokyo. Available from http://www.soumu.go.jp/joho_tsusin/joho_tsusin.html.
- Johns, A., 2003. 'I-mode to sono bijinesu moderu bunseki' [The i-mode business model: a comparative analysis], *Journal of Public Utility Economics*, 55(2):131–38 (in Japanese).
- Jonason, A., and Eliasson, G., 2001. 'Mobile internet revenues: an empirical study of the i-mode portal', *Internet Research: Electronic Networking Applications and Policy*, 11(4):341–48.
- Lindmark, S., Bohlin, E. and Andersson, E., 2004. 'Japan's Mobile Internet Success Story: facts, myths, lessons, and implications', *Info*, 6(6):348–58.
- Kawatake, K., Hara, Y. and Sakurai, T., 1996. 'Nihon wo chushin tosuru terebi joho no nagare' [Japan's television information flows] in K. Kawatake and M. Sugiyama (eds.) *Media no tsutaeru gaikoku no imegi* [Foreign image presented by the Media], Keibunsha, Tokyo.
- Keane, M., 2006. 'Once Were Peripheral: creating media capacity in East Asia', *Media, Culture, and Society*, 28(6):835.
- Lunn, S., 2000. 'The big Mo wins in Japan', *The Australian, media section*, 9 November:13.
- Matsunaga, M., 2000. "Analog" woman hastens digital data delivery', *Japan Quarterly*, 47:23–29.

- McNeill, D., 2001. 'Mission impossible for broadband providers?' *Japan Inc.*, June.
- McGray, D., 2002. 'Japan's gross national cool', *Foreign Policy*, May/June, 130:44–54.
- Mollman, S., 2001b. *Micro-Payment, Macro Issue*, [e-mail newsletter], Japan Inc- Wireless Watch, 20 April.
- Natsuno, T., 2001. *I-mode sutorategii: sekai wa naze oikakenai ka?* [i-mode Strategy: Why doesn't the world follow?] Nikkei BP Publishing, Tokyo.
- Nihon Keizai Shimbun*, 2005. 'Sangyo bunkaryoku ga hiraku 4: Poppu karuchaa contentsu o kenin' Morning Edition, 1 January:22.
- NTT DoCoMo, 2006. Press Release, NTT DoCoMo, Tokyo. Available from <http://www.nttdocomo.com/pr/2006/001303.html> (accessed 20 March 2007).
- , 2007a. 'Monthly Operating Data – i-mode usage', NTT DoCoMo, Tokyo. Available from <http://www.nttdocomo.co.jp/english/corporate/ir/finance/subscriber/imode.html> (accessed 20 March 2007).
- , 2007b. Fact Book March 2007. NTT DoCoMo, Tokyo. Available from http://www.nttdocomo.com/binary/about/facts_factbook.pdf (accessed 28 March 2007).
- OH!NEW?, 2007. Online data source for i-mode independent sites, available from <http://ohnew.co.jp/hepl/data/index.html> (accessed 30 March 2007).
- Peltokorpi, V., Nonaka, I. and Kodama, M., 2007. 'NTT DoCoMo's launch of i-mode in the Japanese mobile phone market: a knowledge creation perspective', *Journal of Management Studies*, 44(1):50–72.
- Tanaka, K., 1998. 'Japanese women's magazines: the language of aspiration', in D.P. Martinez (ed.), *The Worlds of Japanese Popular Culture: gender, shifting boundaries and global cultures*, Cambridge University Press, Cambridge/Melbourne.
- Telecommunications Carriers Association, 2007. Data on Mobile Telephony, Telecommunications Carriers Association, Tokyo. Available from <http://www.tca.or.jp> (accessed 20 March 2007).
- The Times Online*, 2007. *O2 puts on hold its German mobile internet plans*, 19 March. Available from <http://business.timesonline.co.uk/tol/>

business/industry_sectors/telecoms/article1534454.ece (accessed 24 March 2007).

Vishik, C. and Whinston, A.B., 1999. 'Knowledge sharing, quality, and intermediation', *SIGSOFT Software. Engineering Notes*, 24(2):157–166.

Yamaguchi, E., 2004. *Recent characteristics of royalties and license fees in Japan's balance of payments*, *Bank of Japan Working Paper Series*, Bank of Japan, Tokyo. Available from <http://www.boj.or.jp/en/type/ronbun/ron/wps/data/wp04e05.pdf> (accessed 23 February 2007).