AUTO-ID CENTER

WHITE PAPER

RFID as Consumer Empowering Technology
– Unique Opportunities for RFID Deployment in Japan

Mikako OGAWA, Masaki UMEJIMA, Jiro KOKURYO

ABSTRACT

Unique opportunities exist in Japan for the deployment of Radio Frequency Identification (RFID) Technology, quite possibly right down to consumers' hands, fueled by strong demand (willingness to accept and to pay) for mobility, convenience, and safety. We recommend "consumer empowerment" strategies to deal with some critical issues involved, including privacy. Studies of Seven-Eleven, NTT-DOCOMO, and ISHII FOOD Co.,Ltd., are offered to illustrate the points.

If positioned correctly as "consumer empowering technology", rather than "supplier control technology", RFID will be accepted by Japanese consumers as a convenient and people-friendly tool, and its potential benefits will be fully realized.

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Biography

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Mikako OGAWA is a member of the
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Dr. KOKURYO is professor at The Keio
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Dr. Kokuryo received his bachelor
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He earned his MBA and DBA degrees
on Information Technology at Harvard
University in 1992 and started his new
career as a professor at Keio Business
School in the following year. He moved
to the faculty of Environmental
Information at Keio University in 2003.
Dr.Kokuryo is the leading expert on
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Keiei" (1995).

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Contents

1. UNIQUE OPPORTUNITIES

1.1. Convenience, Mobility and Safety

We argue in this paper that unique opportunities exist in Japan for the deployment of Radio Frequency Identification (RFID) Technology, quite possibly right down to consumers' hands, fueled by strong demand (willingness to accept and to pay) for mobility, convenience, and safety. We also recommend "consumer empowerment" strategies to deal with some critical issues involved, including privacy. If positioned correctly as "consumer empowering technology", rather than "supplier control technology", RFID will be accepted by Japanese consumers as a convenient and people-friendly tool, and its potential benefits will be fully realized.

Leaving more extensive explanation to later sections, here is an overview of the situation:

Convenience
A consequence of Japanese consumers' extreme pursuit of convenience (unwillingness to wait for anything) has been the emergence of convenience stores that are open 24 hours a day, with fresh items being replenished three times daily. Naturally, all items are delivered in quantities less than case lots. Sophisticated logistics systems have been developed to support the extensive network of stores. If the Toyota system is "just-in-time" (JIT) inbound to the factory, the convenience store model represents JIT outbound to the consumers' hands. Barcoding has clearly been the enabling technology for convenience stores that rely on single-item point-of-sale replenishment. Applying IDs to individual items will further extend the "art of the possible".

Mobility
One cannot walk anywhere in Tokyo without noticing the high penetration of mobile Internet service. In fact, there are now over 60 million subscribers to the service [1]. The significance of cellular phones goes far beyond their use as ordering devices. Of particular note is the trend for cellular phones to become consumers' electronic wallets, which store not only money but also tickets, coupons and other claims for ownership of virtually anything. The emergence of such mobile commerce devices is triggering what we can characterize as a transformation of logistics from "the point-of-sale" to "the points of consumption". The only missing link is the identification function (ID) that connects physical objects with ownership.

Safety
Japanese consumers have always been very uncompromising in their demand for quality. Last year's revelation of cows infected with BSE shook consumers' confidence in the food supply chain, shifting their source of trust from the traditional "trusting the companies" mode to "trusting the audit system" mode. Passage of a law mandating tracking of each cow is currently being implemented with two-dimensional barcodes, and it would be logical to expect that the system will evolve to adopt RFID tags at some point [2]. Such "tracing" capabilities typically have two aspects. One is for suppliers to track the location and the state of the products they have shipped. This might be called "supplier control". The other is to allow purchasers to identify the origin of the products in their hands. The latter might be called "consumer empowerment". While both are quite important, RFID is particularly significant in that it facilitates consumer empowerment at a much lower cost than before.

Acceptance of New Technologies. Japanese customers have been showing their willingness to accept new forms of technologies and distribution modes. They were somewhat tentative in adopting the Internet so long as the cost of flat rate access was above $300, but when broadband services started three years ago, demand surged almost instantly, resulting in over ten million subscribers by mid-2003. The use of mobile terminals for text communication has spread beyond the younger generation to other age groups, thanks partly to railroad company campaigns aimed at discouraging cellular phone voice communication by train passengers.

1.2. Consumer Empowering Strategies for RFID Deployment

Privacy, of course, is an area requiring special attention in the drive to deploy RFID. Japanese consumers have been sending mixed signals regarding privacy. On the one hand, Japan as a nation retains high sensitivity to any violation of privacy. This probably is a reaction to pre-WWII totalitarianism. The Basic Residential Registers Network System (Juki Net) has come under very heavy attack from its critics, and has been forced to operate under stringent restrictions.

Conversely, consumers have been very receptive to services for which a prerequisite is voluntary submission of personal information. Many of the mobile services, e.g., navigation services, require terminals to declare their locations to the network before they can receive relevant information.

What are the sources of such distinct differences in public acceptance? One explanation might be that Juki Net is compulsory, whereas the mobile services are voluntary. Another point of difference is that Juki Net (at least for the time being) lacks visible benefit to citizens, even though it may lower bureaucratic costs. The mobile services offer tangible benefits.

An important aspect of privacy is the notion of reciprocity, i.e., the structure of information asymmetry. Agricultural societies, including that of Japan, have lived without the concept of privacy for centuries, mainly because the cost of gathering personal information for the purpose of closely monitoring individuals was prohibitively high for central authorities. That changed dramatically with the advent of electronic media, including radio and telegraph, which gave central authorities a monopoly on the collection and dissemination of information. The notion of privacy developed as a means of countering the modern power of one-way electronic media.

It is possible to put the contrast in a more historical context. That is, we can characterize RFID as the ultimate control mechanism for the mass production and supply system, or as technology that restores the "lost link" between producers and consumers of products.

For those of us who grew up in the twentieth and early twenty-first centuries, it almost seems natural NOT to know where the food you are eating came from. By the same token, you, as producers, often do not know who your end customers are. But of course, that is not natural in a historical context.

RFID, by allowing producers to know where goods went and by letting consumers know where the products came from, restores the link. If applied correctly, it can be used not only by producers to manage the supply chain responsibly, but also by consumers to acquire the power of knowledge.

2. CONVENIENCE STORE INDUSTRY OVERVIEW

To understand and to exploit the opportunities, it would be helpful to understand the convenience, mobility and safety elements a little more. Let us start with convenience:
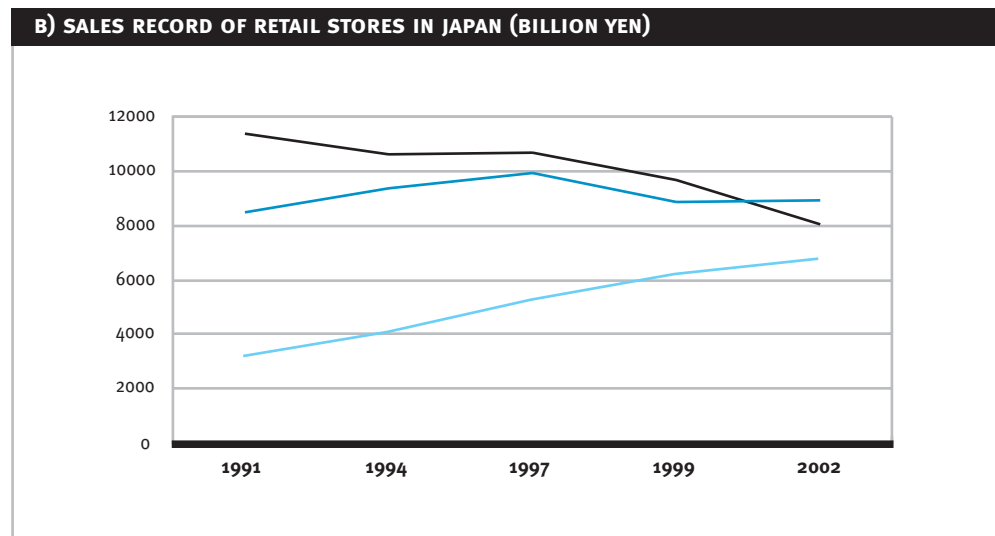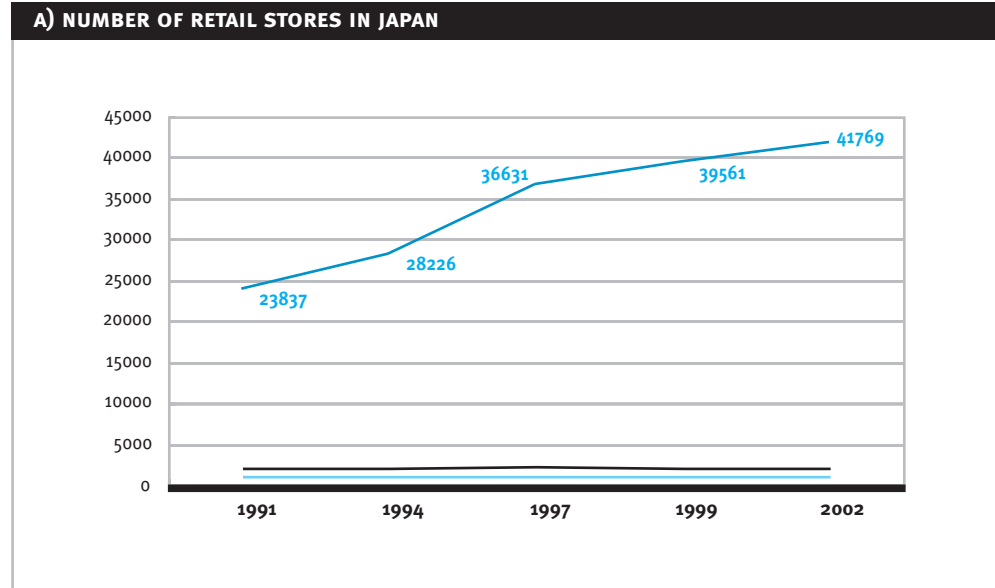
2.1. New Urban Platform

Convenience stores, which generally stay open 24 hours a day, are an essential part of urban life in Japan. Ever since Ito-Yokado, an incumbent retail player, imported the Seven-Eleven concept, the convenience store format has continued to flourish. We can observe that growth in the increasing number of stores and rising revenues [3].

Figure 1a & b: Convenience stores are in the growing sector of retail businesses in Japan.

Key:
—— Department Store
—— GMS
—— Convenience Store

Outlook of retail business in Japan

– Department Store
– Shrinking market
– The number of stores has kept going down.
– Market volume is shrinking, so restructure is undergoing among major players: Mitsukoshi, Seibu, and Sogo.

– General Merchandise Store
– Maturing market
– The number of stores is stable after a downturn from 1997 to 1999.
  – Market volume of 2003 shows 0.8% increse than in 2002

– Convenience store
– Expanding market
– The number of stores is going up Store sales keep increasing.

A) NUMBER OF RETAIL STORES IN JAPAN

B) SALES RECORD OF RETAIL STORES IN JAPAN (BILLION YEN)

This new urban lifestyle platform serves urban residents with a variety of convenience functions, including food and beverages, groceries, magazines, and ATM banking services. In addition, many convenience stores have started collecting residential taxes and water rates on behalf of city offices, and some stores have begun supporting the security of children through alliances with local police stations.

The role of the convenience store in urban life is becoming greater and more intrinsic, so it could be an accurate definition that convenience stores are the new infrastructure in Japanese urban life.

However, the environment in which convenience stores operate is not easy, rather it is tough and competitive. In the Tokyo urban area, it is not uncommon to find five convenience stores within a 1 km radius. A number of stores are rapidly moving toward stocking a limited range of customers' consumption needs, strongly linked to diversified preferences; these are broken down into quite a few clusters: e.g., gender, region, income, climate, events, trends, etc.

In order to respond to these diversified preferences, a shop manager needs to forecast customers' demands precisely, and to offer a number of popular products so that inventories are optimized. Some argue that, if retailers were to narrow their product ranges into fewer choices that they promoted heavily, inventory optimization would be easier. However, will consumer favor to accept this approach? Of course, even the most quality-conscious Japanese consumers look for discounts, and react positively to reasonably priced products. However, it is equally true that these shoppers tend to seek out other stores that provide greater shopping satisfaction. Furthermore, as many convenience stores cram into small localities the cost of lost sales becomes higher. In fact, one lost opportunity may mean losing a loyal customer forever. Thus, narrowing product ranges is often not practical.

Conclusion
There are two requirements for convenience stores to be able to survive this mega competition. First, inventories must be optimized. Second, by removing unpopular products, stores carry only highly saleable items, so that product ranges never need to be narrowed. Conclusion: Item management is essential for implementing these practices. It comprises two original systems: a frequent delivery system and an in-store information system. Seven-Eleven Japan, the "Best Practice" Japanese convenience store chain, has introduced item management into all stores, using barcoding.

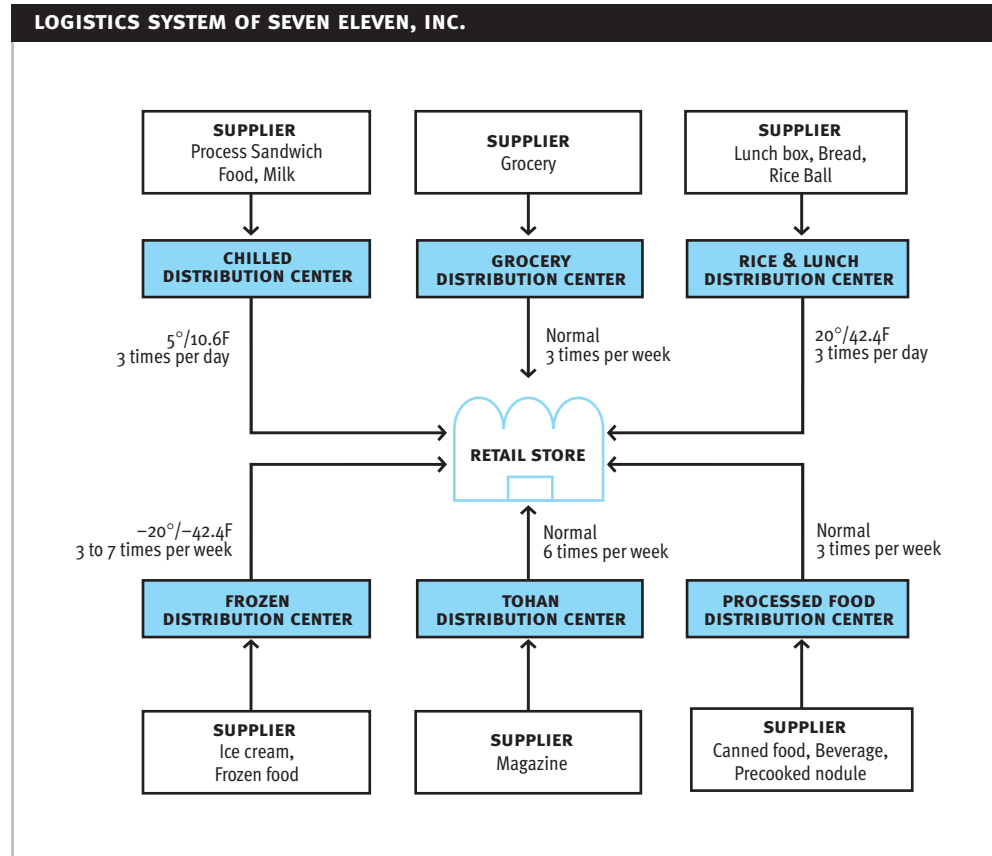## 2.2. Frequent Single Item-based Delivery System

The items that a Seven-Eleven carries are segmented into the following four categories: processed foods, fast foods, everyday foods, and non–food lines [4]. Food categories, which account for approximately 70 percent of total annual revenue per year, rely on freshness to maintain both taste and customer satisfaction, so frequent delivery is essential.

In addition, the typical customer shopping behavior is "more visits, fewer items"; a customer goes shopping to buy one rice ball for breakfast, then shops again at mid-day for beverages. For the purposes of responding to this shopping behavior and optimizing inventories, case-lot delivery is ineffective whereas item-based delivery works; if one case lot of rice balls were to be delivered in the morning to a store that has no stockroom, by mid-day time-expired rice balls would piling up at the back of the store.

Conclusion
From logistics center to storefront, all items are delivered in mixed consignments, divided into defined temperature groups: −20°, 5°, normal, and 20° [5]. On average, a truck shuttles between logistics centers and a store ten times a day. Frequent and item-based deliveries were born out of responding to customer needs.

Figure 2: Ten times track deliveries per day make possible to respond to customer needs.

LOGISTICS SYSTEM OF SEVEN ELEVEN, INC.

SUPPLIER Process Sandwich Food, Milk	SUPPLIER Grocery	SUPPLIER Lunch box, Bread, Rice Ball
↓	↓	↓
CHILLED DISTRIBUTION CENTER	**GROCERY DISTRIBUTION CENTER**	**RICE & LUNCH DISTRIBUTION CENTER**

5°/10.6F
3 times per day

Normal
3 times per week

20°/42.4F
3 times per day

RETAIL STORE

−20°/−42.4F
3 to 7 times per week

Normal
6 times per week

Normal
3 times per week

FROZEN DISTRIBUTION CENTER	**TOHAN DISTRIBUTION CENTER**	**PROCESSED FOOD DISTRIBUTION CENTER**
↑	↑	↑
SUPPLIER Ice cream, Frozen food	SUPPLIER Magazine	SUPPLIER Canned food, Beverage, Precooked nodule

2.3. Store Information System

The store information system is designed to assist in culling unpopular products from a store. In order to identify unpopular products, accurate sales record and inventory record are essential.

How efficient is the system installed in all Seven-Eleven stores? Tomoyuki Ogata, the author of "Information Retailing Revolution at Seven-Eleven", explains that the in-store information system consists of four machines: store computer, point-of-sale register (POS register), graphic ordering terminal (GOT), and scanner terminal (ST).

The store computer: this manages all information flows, linking to sales and inventory. The store manager can obtain point-of-sale information and all inventory information from the computer screen.

POS Register: This machine manages all sales data by item. It is linked to the store computer so that POS data can be combined with inventory information.

GOT: The graphic ordering terminal comprises an automatic ordering system and inventory lists. A store manager, or a veteran part-time worker can decide all orders based on the current inventory information by item and new product information from the store computer.

ST: The scanner terminal's role is to maintain a running count of delivered items. If the delivered quantity differs from the ordered quantity, it indicates a distribution center or logistics error.

2.4. Convenience Stores as a Prospective Opportunity for RFID Installation

The successful deployment by Seven-Eleven proves that barcoding is a cost-effective means of tallying accurate inventories, so the item management requirement has already been met.

Therefore, in order to deploy RFID into convenience stores, we need to find a solution to only one issue: identifying customer value. The key question for convenience stores is how to satisfy consumers. The frequent delivery system was developed so that customers can count on being able to buy and consume a fresh rice ball at any time of the day. Item management has emerged as a means of culling unpopular products, so that customers can enjoy shopping not from fewer items but from many choices. This quest for customer satisfaction gave birth to Seven-Eleven's efficient store management system, making the franchise a pacesetter in its field.

In a mass segmented marketing environment, the current system will continue to be competitive, as proven by Seven-Eleven's best practice. However, we believe that when customers' shopping behavior is changeable there is no established and finite system. And, every successful convenience store knows how to succeed in business, and aims to identify new reasons for customer satisfaction. On the other hand, customers are seeking greater convenience, and are mentally prepared to accept premium pricing in return for such convenience.

Therefore, we arrived at a hypothesis that convenience stores represent prospective opportunities, once we can identify the value of RFID-sourced information to consumers. And, a promising vein of valuable information has emerged.

2.5. Valuable Information Provided by RFID

Our group predicts that consumers will tend to react more to credibility than to price, especially in the food category, which accounts for over 70% of Seven-Eleven's total revenue. Since last years' scare about cows infected with BSE, consumer reaction to the credibility of foodstuffs has accelerated. There has been a major shift in the basis for consumer confidence in the food supply chain – away from traditional "trusting the companies" to "trusting the quality audit system." We believe that RFID and Auto-ID are well suited to efficient transmission of this quality audit information to consumers.

Figure 3: Convenience stores have potential opportunities of enabling consumer empowerment in using identifying technology.
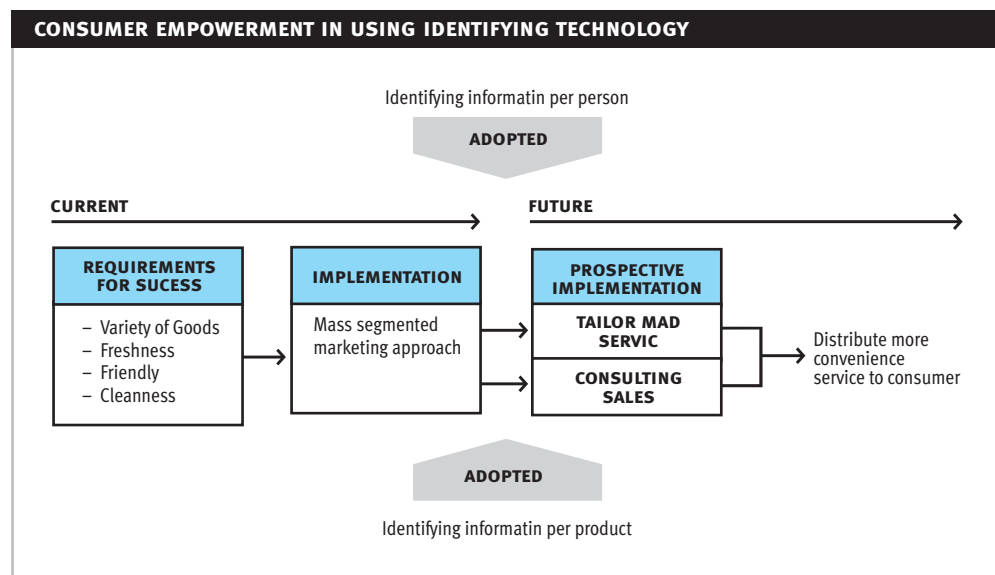
3. MOBILE COMMUNICATIONS INDUSTRY OVERVIEW

According to a survey carried out by the Ministry of Public Management, the number of cellular phone subscribers reached 78,222,450 in August 2003. Some argue that cellular phone carriers are approaching market maturity. In fact, at about 60 percent of the national population, the number of subscribers is close to ceiling level. However, that perception only applies if cellular phones are viewed merely as ordering service equipment whose functionality is limited to telephony.

Since NTT DoCoMo, the Japanese leading mobile phone carrier, launched the packet network service called i-mode in 1999, cellular phone handsets have been capable of running multiple functions, in addition to that of a telephone. With strong support from users, who are demanding a more convenient networked society, i-mode continues to initiate new services, such as e-mail, image capture, electronic wallet, ticket, location identifier, and barcode reader.

The successful launch of i-mode has motivated competitors like J-Phone (Vodafone) and AU (KDDI) to enter this developing market. Currently, around 80 percent of Japanese cellular phone subscribers are using their phones to access wireless Internet services. Japan boasts the world's highest proportion of cellular internet service subscribers, numbering over 60 million [6].
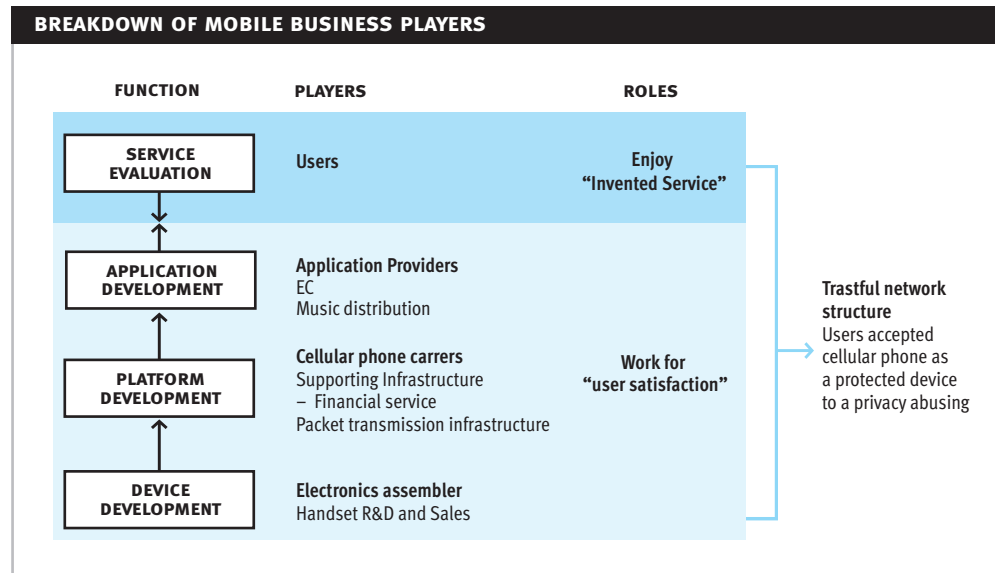
3.1. Ubiquitous: Internet on-hand, Anytime and Anywhere

In Japan, the predominant connection with the Internet is not through the PC but through the cellular phone. In many other countries, only business people who have PDAs or portable PCs can experience this enjoyable benefit, whereby the network belongs to the individual. On the other hand, there is no restriction to "ubiquitous". Japanese consumers, from housewives to high school students, have experienced and are enjoying this ubiquitous network lifestyle. Wireless Internet services using cellular phones via the packet network, have become "infrastructure", just as the wired telephone network did, in its day.

3.2. Organization of the Mobile Business Scene

The mobile business scene in Japan comprises three independent players: carriers, application providers, and users. The significance of this structure is that each group stands independently, but is also strongly linked to the others in pursuit of a common cause: working for users' satisfaction. Each player's role is as follows:

Figure 4: All players work for the same objective, work for user satisfaction in Japanese mobile business scene.

BREAKDOWN OF MOBILE BUSINESS PLAYERS

FUNCTION	PLAYERS	ROLES	
SERVICE EVALUATION	Users	Enjoy "Invented Service"	
APPLICATION DEVELOPMENT	Application Providers EC Music distribution		Trastful network structure Users accepted cellular phone as a protected device to a privacy abusing
PLATFORM DEVELOPMENT	Cellular phone carrers Supporting Infrastructure – Financial service Packet transmission infrastructure	Work for "user satisfaction"	
DEVICE DEVELOPMENT	Electronics assembler Handset R&D and Sales		

Cellular phone carriers: Cellular phone carriers provide users with network infrastructure and business infrastructure. Network infrastructure is the system that provides packets from the application provider to the user. The significance of this is that the number of packets that a network can handle determines carriers' revenue levels. For example, NTT DoCoMo charges 0.3 yen per packet; one packet is 128 bytes. If an application provider develops a popular service, consuming a large number of packets, NTT DoCoMo's income automatically increases [7].

Ongoing infrastructure development has seen cellular phone carriers beginning to develop new handsets in collaboration with electronic device manufacturers – NEC, Matsushita, Kyocera, Toshiba, Nokia, Motorola, etc. Involving these manufacturers in the handset development process produces big benefits for the cellular phone carriers. By sharing the huge development cost with manufacturers, cellular phone carriers can drastically reduce investment per handset without compromising the rate and scale of handset development. Of course, carriers and manufacturers adjust the intensity of development according to projected user demand. This is very changeable in Japan, so accurate forecasting is very difficult. Given this changeability in customer needs, the decentralized process is an effective approach to investment in handset development. For example, a cellular phone carrier may initiate handset developments with 10 manufacturers. The carrier briefs each assembler to develop their own unique new handset, so that users can select their preference from 10 distinct choices.

Conclusion: The carrier is able to provide, at low cost, handsets to satisfy a wide variety of customers. Along with network infrastructure, business infrastructure accelerates the emergence of a successful application model. One significant example is financial services, which charge users for service usage, on behalf of application providers. This "electronic wallet" service has been welcomed by users and application providers for the following reasons: First, users can enjoy shopping without worrying about extra charges for using a financial service. Second, application providers can charge for usage at a low cost compared to credit card service fees, making it easy to build a mutually beneficial model.

Conclusion: Cellular phones with multiple functions tend to accelerate application developments and handset developments as outlined above, and this has happened.

Application providers: In response to development of the network environment, the number of subscribers to mobile Internet services has increased, and opportunities for applying mobile application to users have

expanded massively. In addition, i-mode's adoption of "XHTML" as a programming language meant that developments were accelerated [XHTML] has similar features to HTML, so programmers are easily converted.

As a result of these contributions, the number of applications distributed through mobile Internet service continues to increase: The i-mode menu site (official registered site of DoCoMo) offers more than 3000. The total number of applications is approximately 60,000 [8].

Responding to the current pace of development in network environments and handset devices, application providers continue to invent new services, in line with users' demands.

Users: A successful business grows out of user satisfaction. Cellular phone carriers and application providers cannot survive without reacting to changing user demands. For example, the camera-equipped handset was a success in terms of adding new functionality in a handset. Cellular phone subscribers who like the idea of having a camera always at hand have embraced this handset since the beginning of 2000. "Camera phone" users have continued to increase in number: at last count, 22 million, or 30 percent of all cellular phone subscribers [9].

This successful deployment of new technology to consumers shows the importance of making value more visible to users/consumers.

3.3. Cellular Phone as RFID Enabled Personal Information Station

Mobile networks develop by realizing a wide range of user demands as application services.
Can RFID follow this successful path?

The authors of this paper agreed on the hypothesis: consumer empowerment can be accomplished at low cost when a mobile phone is used as reader of information delivered by RFID enabled systems. A preliminary experiment, subsidized by Japan's Ministry of Economy, Trade and Industry (METI), has already begun. NTT DoCoMo and the Mori Building have developed and installed the new platform, called a "multi-device platform", making it possible to channel information into advanced information services at Roppongi Hills, a new, large-scale, mixed residential-business development in Tokyo's Minato ward [10].

The significance of this system is that it responds to the privacy issue by allowing users to decide whether or not to send and/or receive information on their mobile devices. Å@It also allows stores to customize services to individual customers who prefer to remain anonymous. This solution could be effective in resolving privacy issues in respect of RFID. Some argue that RFID integration could give rise to privacy concerns. However, we may learn by experiences of Japanese mobile scene that these privacy concerns will be overwhelmed when new technology makes it real the value that consumers seek to seize voluntarily.

Combining RFID tags and a mobile phone makes it possible for users (anonymously, if they prefer) to receive location, time, and personalized information based on their preferences or interests. And, each RFID tag, when chosen by customers to do so, can transmit a location identification signal at regular intervals, as well as allowing users to transmit an ID signal.

4. SAFETY: A CASE STUDY OF CONSUMER
— EMPOWERING USE OF ID TECHNOLOGY

The benefits of a technology flow from business models that turn advantage into consumer value. ISHII FOOD Co., Ltd. is a notable example of a company that has utilized ID technology brilliantly, has empowered consumers by providing the power of information, and has succeeded in raising its brand value. While ISHII FOOD Co., Ltd. does not currently use RFID, its case offers clues for the future direction of business once the technology is fully deployed.

4.1. Background

ISHII FOOD Co., Ltd. (www.ishiifood.co.epc, based in Chiba prefecture, Japan) is a medium-sized food processing company. Processed meat goods, such as hamburger patties and meatballs, make up 76.6 percent of product sales. ISHII FOOD Co., Ltd. has been pursuing realization of traceability from long before its early stages. The company established "3 Fundamental Principles for Delicacy: additive-free cooking, careful ingredient selection, and the guarantee-of-quality (ID) number". These policies were positioned under the broader corporate philosophy of delivering to consumers safe, trustworthy, healthy and delicious foods". In implementing this philosophy, the company has intensively promoted disclosure of information to customers. It has also vigorously reorganized suppliers, as well as reforming the internal production line.

Over recent years, a series of scandals involving food companies surfaced in Japan – food poisoning incidents, factory camouflage incidents, etc. As a result, consumers began clamoring for "safety in foods". In this climate, ISHII FOOD Co., Ltd. came to attract attention as a company that has implemented a system to log histories of production, processing, distribution, and sales; to manage them; and to trace information back/forward [11].

4.2. Additive-free Strategy and Control System

The construction process, which assures traceability, overlaps that of quality control thoroughness. ISHII FOOD Co., Ltd. has invested about 1 billion yen (US$11 million), to date, and introduced a quality control system using two-dimensional data code technology. On the production line, ingredient information on the two-dimensional code labels is read on a hand-held terminal; when any unaccounted – for material is detected, the production line is immediately stopped.

To assure information reliability, ISHII FOOD Co., Ltd. periodically, or without prior warning, dispatches an employee of the quality control section to a farm or a seasoning supplier's plant, to order an agricultural-chemicals inspection or inspection of product lines. The inspection is rigorously conducted by two or more employees, using an "inspection kit and list". Public inspection organizations are also used for inspections.

ISHII FOOD Co., Ltd. began pursuing "additive-free, delicious" as a differentiation strategy in 1997. The strategy grew out of the following perception: "If our commitment and brand image are accepted by consumers, productivity and profit will rise in the long term. And, if we are successful in differentiating our products, we can avoid getting involved in common price competition".

Such a program meant having to change customer perceptions, as well. For a long time, the food industry tried to appeal to consumers by improving the taste, shape and color of food by using additives. On the other hand, although additive-free food was also tasty, it didn't have eye appeal and was difficult to produce efficiently. The Ishii production system implemented a policy of additive-free cooking. The only exception to the policy was some seasonings that are regularly used in home kitchens.

4.3. Disclosure System

The system and its collateral information disclosure policy could not have come about without strict quality control and information management. Realizing additive-free processed food lines involved many aspects and complex measures, including product development, ingredients, supply, processing manufacture, sales, and information disclosure.

For the purpose of information disclosure, ISHII FOOD Co., Ltd. required suppliers to guarantee that their products were additive-free. After about two years of negotiations with suppliers, the list of 600 companies was reduced to 250. Some suppliers rejected disclosure on the basis of "trade secrets", or difficulty of additive-free production. Moreover, the company decided to withdraw from the house-brand chilled daily dish business for convenience store chains or supermarkets. The business made up ten percent of gross sales and was worth about 1,500 million yen (US$18 million), back in 1999.

Through this series of company initiatives, there was a marked increase in the amount and kind of information which can be divulged to consumers. This corresponded to 500 consumer telephone inquiries a day, from April 2000, on the ISHII FOOD Co., Ltd. Guarantee-of-Quality number. Since its December 2001 launch, the Web-based information disclosure site, "Open Ishii", has attracted around 1,000 hits a day [12]. In addition to details of ingredients, genetically modified elements and allergens, the information on agricultural chemicals inspections and production locations was also disclosed the following year. Such information can be searched by accessing the "Open Ishii" Web site, and entering the Guarantee-of-Quality number and the quality assurance date printed on the product packaging.
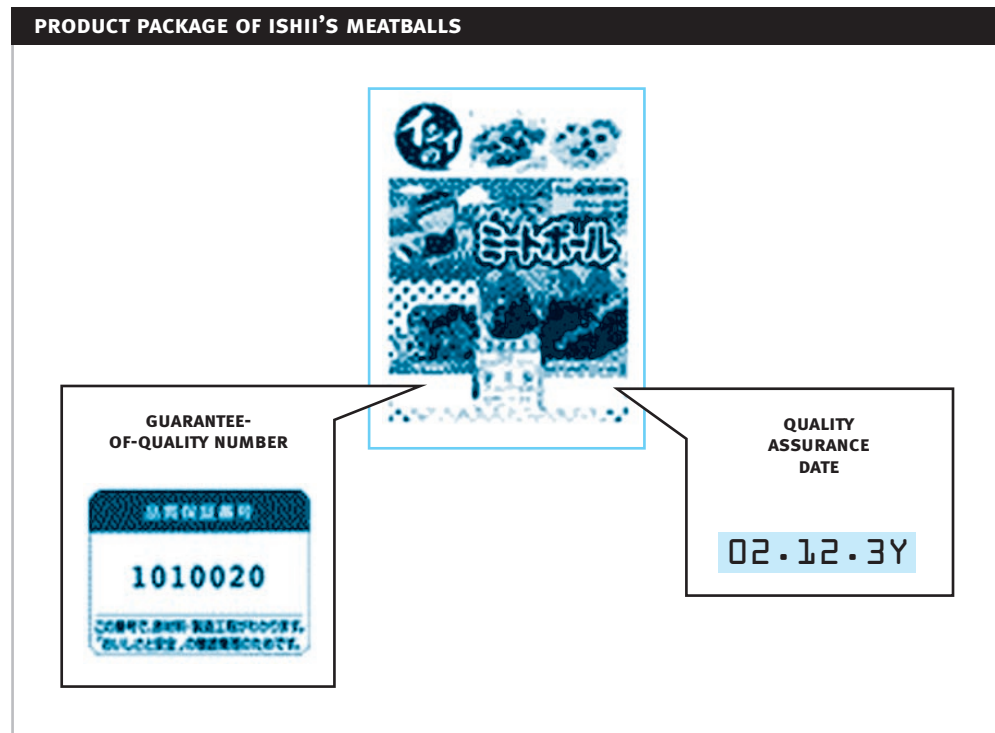
Figure 5

PRODUCT PACKAGE OF ISHII'S MEATBALLS

GUARANTEE-OF-QUALITY NUMBER

1010020

QUALITY ASSURANCE DATE

02.12.3Y

Figure 6:

1 Ingredients, Type, Variety, Processing Place, Cropped Date, Production District, Genetically Modified

2 Allergic Ingredients Information (egg, milk, soy …)

INFORMATION DISCLOSURE SYSTEM: "OPEN ISHII"

4.4. The Bottom Line

A questionnaire survey of the membership of the "Waku-waku Healthy Club" (in which loyal customers of ISHII FOOD Co., Ltd. have registered) revealed that trust in the company had been raised by information disclosure [13]. "Waku-waku Healthy Club" itself was a result of disclosure efforts. For example, a campaign in April 2000, which offered 1,000 customers samples of ingredients used in Ishii's products, such as matsutake mushrooms, chestnuts, onions, and bamboo shoots; or invited customers to take factory tours. Of the 300,000 people who responded to this campaign, 150,000 joined the fan club. The core members of the club are housewives with young children. Membership is growing via word of mouth. Re-registration is required, annually. There are currently 190,000 active users.

This improvement in brand image has also contributed to sales. While the precise effect is not measurable, because of fluctuations in the retail market environment and consequent changes in product lines, it is possible to discern some positive trends. For example, a shift was observed whereby sales of more expensive, premium products increased, even as consumers purchased low-end Ishii-brand foods. Company-wide sales increased 3% in the last fiscal year.

Consumer empowerment can be positioned as a marketing strategy that establishes competitive advantages. In other words, it is how consumer trust engendered by information disclosure can be related to profit. Company president Mr. Ishii says that employee consciousness is the key factor in succeeding at consumer empowerment. "There still lingers in our company a 20th century kind of mentality that believes in volume and mass production efficiency. But the era of mass production and mass sales, or of appearance and price is over. It is becoming more important to focus on every single product, one by one. The 21st century will be the age of "quality", which means minimizing loss. It is crucial to recognize that safety is a

"promise" to customers, and not merely a set of internal guidelines. These two issues are completely different. ISHII FOOD Co., Ltd. aims at "maternal agent". Consumer sentiment differs from a supplier's logic. Contributing to society while still turning a fair profit calls for a revised sense of values."

5. CONCLUSION: POSITIONING RFID AS A CONSUMER EMPOWERMENT TOOL

Convenience stores and mobile networking represent opportunities for reorganizing logistics systems away from the traditional point-of-sale (POS) based system toward a point-of-use (POU) system. RFID technology is a powerful tool with which to develop such services, and to build business models for POU systems.

To realize such opportunities, we must deploy RFID technology as a "customer empowering" system. By demonstrating that RFID deployment will actually increase consumers' (rather than suppliers') access to information, and thereby shift information asymmetryÅ@in favor of consumers, resistance based on privacy concerns can be contained. To drive home that point, it would be useful to consider the difference between "supplier control strategy" and "consumer empowering strategy".

Supplier control strategy. This strategy focuses on giving suppliers and distribution channels the information necessary to improve their products or services. Current location of products shipped by companies is a prime example of useful information. Thus, both supply chain management (SCM) and customer relationship management (CRM) figure in this kind of strategy.

Consumer empowering strategy. This approach emphasizes the provision of information to consumers, as in disclosure of the origin of food items purchased by consumers.

The two strategies are not mutually exclusive. In fact, the supply side must closely monitor the supply chain, in order to deliver information to consumers. The supply side must also closely guard information, to protect privacy. Thus, well-implemented consumer empowerment practice delivers a great deal of information to suppliers.

As Mr. Ishii points out, the difference is in the attitude. We need to be sincere in our efforts to use technology to disclose more information to the consumers, rather than to collect their information by stealth. We should make clear statements about such intentions and appeal for public acceptance. Without such acceptance, many of the potential benefits of RFID will not materialize.

Such delivery of information to the customer does not have to be a cost-increasing proposition; it can, instead, be cost-saving exercise. "Quality" used to be seen as a cost-increasing proposition, i.e., quality and cost in a trade-off relationship. This was later proven to be a fallacy, and it has now become industrial common sense that better quality and lower cost are actually synonymous, as quality failure means a dysfunctional system which inherently produces loss. In the post-mass-production society, we need to tailor each purchasing experience in such a way as to maximize customer satisfaction. We are now equipped with a technology to implement that process, both effectively and efficiently. Let's make it happen.

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11. **From a survey**
    76.1% of people feel uneasy about the safety of food. Concern was higher among females, at 80.4%. People whose concerns about food have increased over the last 2 to 3 years came in at 59.2%. Those who aim to buy additive-free processed food as often as possible are 73.5% of females, and 63.3% of males. About 50% of respondents indicated that even if organically grown vegetables, food products with minimal use of agricultural chemicals in cultivation, or additive- free processed foods cost ten to twenty percent more than standard lines we would buy them. The proportions of people who answered 'Yes' to the question, When you buy a perishable food, do you check the place of origin from the label or at the counter? Were 82.6% of females, and 70.9% of males. When we look at the proportion of people who answered Care in relation to 20 reliability or security (safety and protection) issues, uneasiness about food safety ranked fourth, at 76.1%, after a medical mistake, a massive earthquake, and air pollution and pollution accompanying refuse disposal. Nikkei Marketing Journal, 01.18.2001

12. **Nikkei Industrial Daily, 08.01. 2000**

13. "Waku-waku" is the expression for a sense of anticipation, similar to "Wow! Wow!"