



The Global Language of Business



Japan National Stadium (Tokyo Olympics main stadium)

GS1 Japan Handbook

2021-2022

Message from the President

GS1 Japan was founded in 1972, just one year after the introduction of Global Trade Item Numbers (GTINs). Since then, it has grown alongside EAN International (GS1) and other member organisations.

In subsequent years, the total number of GS1 Company Prefixes (GCPs) licensed to businesses in Japan has gradually increased consistently to approximately 145,000. This means the introduction of the GS1 standards in Japan has been progressed steadily.

Given the increased use of IT and the Internet in recent years, there has been a growing need for society as a whole to respond to the continued advancement of digitisation and Internet utilisation. Since 2020, this trend has been accelerated by the spread of COVID-19 due to infection prevention measures such as restrictions on going out, and it seems that this trend will continue even if the threat of COVID-19 subsides.

The expansion in online sales has increased the importance of GTINs in terms of identifying the vast number of products, and the need for more rigid management of GTINs and GCPs has led GS1 to review the relevant rules and systems. In response to this development, we made a major revision to our GCP licence system starting from August 2021. The first such change in nearly 40 years, this revision included reducing the renewal period from three years to one year.

We have continued developing GS1 Japan Data Bank (GJDB), whose main purpose is to make it easier for domestic GCP licensees (brand owners) to set up GTINs and manage their own product information. GJDB is also designed to support GS1 initiatives, including integration with the GS1 Registry Platform. Many stakeholders have already begun to use GJDB, and we will continue to develop new services to further support the digitisation of the distribution industry.

In the healthcare sector, thanks to collaborative efforts with the medical industry and the government to improve medical safety and distribution efficiency, almost all prescription drugs and devices are already source marked with GS1 standard barcodes. This will become mandatory under a law to be enacted in December 2022.

The use of radio frequency identification (RFID) is also spreading rapidly, especially in the apparel industry. RFID systems are beginning to be used for not only warehousing and inventory control but also payment operations (e.g., automated self-checkout). In addition, a variety of other initiatives and experiments are underway, including the use for medical device identification. Furthermore, RFID can be utilised for traceability and marketing by collecting detailed data on the movement of individual products and sharing them with other trading partners and consumers. We are promoting the use of EPC/RFID through domestic industry associations and other organisations.



We will continue to respond quickly and appropriately to the needs of the times by promoting GS1 standards so as to streamline and improve business operations while also enhancing consumer satisfaction.

To this end, we look forward to undertaking collaborative work with user companies, GS1 member organisations, the GS1 Global Office, and other GS1 community members.

A handwritten signature in black ink that reads "Yoichi Mukae". The signature is written in a cursive, flowing style.

MUKAE Yoichi

President

GS1 Japan

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1 Sectors (Case Studies)

1.1 Retail and CPG

1.1.1 Utilisation of GS1 barcodes in a logistics centre

The use of EAN symbols in POS systems has become vital, of course, but the range of their application is not limited to that. EAN and ITF symbols are also used at logistics centres in operations such as product inspection and picking.

CX Cargo Co., Ltd. (CX Cargo), a subsidiary of Japanese Consumers' Co-operative Union (JCCU), provides total logistics support for their parent company. They handle a variety of items, including both JCCU private brands and national brands.

CX Cargo's logistics centre in Noda, which is in Japan's Chiba prefecture, is one of their main logistics centres and covers the Kanto area, including Tokyo. It has multiple functions such as

being a distribution centre (DC), transfer centre (TC) and set centre (SC).

- Distribution centre (DC): Stocking items for delivering them to stores and homes
- Transfer centre (TC): Sorting carton cases and single items for stores
- Set centre (SC): Sorting items for home delivery

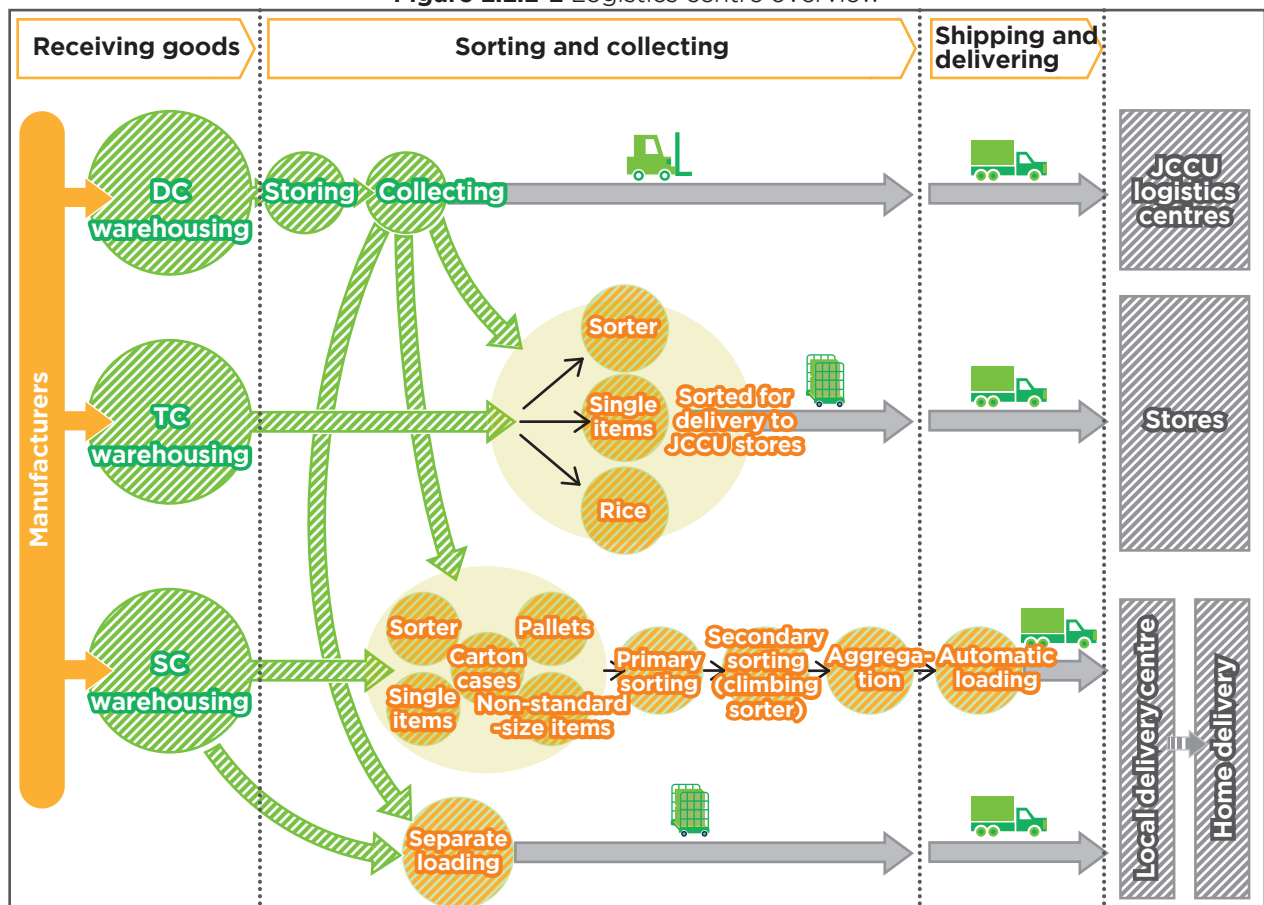
The Noda Centre is characterised by its ability to provide both B2B and B2C logistics functions (Figure 1.1.1-1).

GS1 barcodes are used in the logistics centre as follows.

1.1.1.1 Use of ITF symbols in the DC

The logistics functions of the DC are stocking items for delivery to stores and homes. During the incoming goods inspection, staff confirm the

Figure 1.1.1-1 Logistics centre overview



items by reading ITF symbols on carton cases with hand-held terminals.

As for manufacturing dates and best-before dates, the information on the carton cases is visually checked and entered into the hand-held terminals manually.

1.1.1.2 Use of ITF and EAN symbols in the TC

In the TC, carton cases and single items for stores are sorted.

With regard to the sorting of cartons, ITF symbols on the cases are automatically read by fixed scanners installed on the sorters. Based on the scanned GTINs, cases are sorted into chutes for each store.

The sorting of single items is a two-step process.

First, staff pick up the required number of items and scan the EAN symbols on them and the proprietary barcodes on trays in which individual numbers are encoded. This process links the trays and the items in the system together. Then, the trays with the items are conveyed to the next line and staff put the goods into containers for each store.

1.1.1.3 Use of EAN symbols in the SC

Items for home delivery are sorted in the SC. There are 85,000 home delivery orders per day and approximately 400,000 items are shipped daily. In order to carry out this large volume of order processing at high speed, an automated system was implemented to sort the products and aggregate them by each order.

In the sorting process, proprietary barcodes on trays for sorting by destination are read by fixed scanners installed on the sorters. Then, staff scan the EAN symbols on items and move them from the carton cases to the trays. At this point, the trays and items are linked together.

After that, the trays containing the items are conveyed to an automated storage rack (Figure

1.1.1.3-1). The trays are automatically rearranged in the rack in accordance with each order and conveyed to the aggregation line. Staff have only to pick and pack the conveyed products into containers.

In the logistics centres, ITF and EAN symbols are used in the processes for incoming goods inspections and sorting operations. Utilising GS1 barcodes achieves quick and accurate checking.

Figure 1.1.1.3-1 Automated storage rack



As a result of COVID-19, the demand for logistics, especially home delivery, has increased significantly. Nowadays, there are increasing expectations in the industry for GS1 QR codes and GS1-128 symbols. This is because these symbols can additionally encode information such as production date and best-before date. If these kinds of information, which are currently checked visually, can be checked by reading such barcodes, it will lead to lower workloads and even more accurate inspections.

1.2 Healthcare

1.2.1 Use of GS1 barcodes in medical product distribution - Case study at a distribution facility of TOMIKI MEDICAL INSTRUMENTS co. Ltd.-

1.2.1.1 Introduction

In Japan, most medical devices are labelled with GS1 barcodes (GS1-128 symbols or GS1 DataMatrix), which include GTINs and other information (e.g., lot numbers and expiration dates). Moreover, barcode labelling for medical devices will become a legal requirement from December 2022. Under these circumstances, wholesalers dealing with medical products are working to realise safer and more efficient product distribution by using GS1 barcodes to check such product information in shipping and product inspections. TOMIKI MEDICAL INSTRUMENTS co. Ltd. (TOMIKI) is well known for its early establishment of an automated warehouse system and efficient product management using GS1 barcodes.

1.2.1.2 Overview of the logistics facility

Headquartered in Ishikawa Prefecture, TOMIKI sells products to hospitals in three prefectures located within the Hokuriku region. This document provides two examples of the use of barcodes at the two distribution bases described below.

Logistics Centre

The Logistics Centre is a two-storey warehouse that has been in operation since November 1998. With a total floor area of about 4,744 m² (including a warehouse area of about 2,272 m²), it also has an automated warehouse with an area of 429 m². The centre handles approximately 200,000 SKUs of medical devices and general consumer goods, including health foods and office supplies to be used in hospitals or clinics.

JUST Supply Centre

The JUST Supply Centre functions as an off-site warehouse for hospitals and manages their product inventory. Compared to the Logistics Centre, this facility is characterised by its ability

to provide more comprehensive services, such as subdividing products, to suit the operations of each individual hospital. Originally, this business was performed by the Logistics Centre, but the warehouse became too small as the business expanded. As a result, this facility was opened close to the Logistics Centre in May 2012. With a floor space of 1,398 m², it is equipped with a refrigeration room for managing pharmaceutical products.

1.2.1.3 Workflow and barcode usage in the Logistics Centre

Figure 1.2.1.3-1 shows the workflow employed at the Logistics Centre. The processes involved in the various operations are described below.

Receiving and warehousing operations

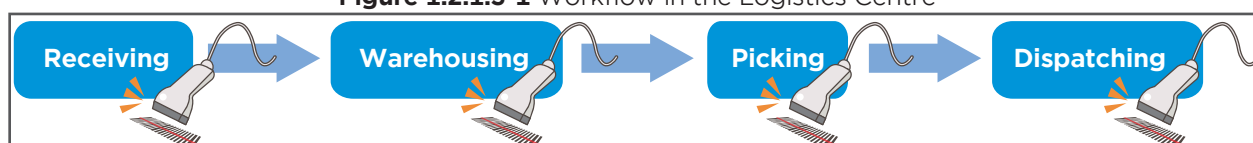
Every morning, products are delivered to the Logistics Centre. Upon arrival, these products are checked by using a handheld terminal to scan the GS1 barcode on each product package. This process is quicker and more accurate than checking the products manually. In addition, by retrieving the expiration date and lot number at the same time as the GTIN, the system automatically confirms that none of the products has expired. After that, the product receipt date and other necessary information.

After the receiving procedure has been completed, the products are repackaged into the following three groups.

Actually the service is providing the following information.

- Products that will be stocked at the Logistics Centre
- Products that have been ordered by the client and are to be sent immediately
- Products that are to be sent to the JUST Supply Centre

Figure 1.2.1.3-1 Workflow in the Logistics Centre



Each operation takes advantage of GS1 barcode scanning

Based on their respective destinations or storage locations, the products are organised into areas such as the following: the automated warehouse (Figure 1.2.1.3-2), the storage shelves (Figure 1.2.1.3-3), or the ordered goods area. In the warehouse, products are automatically transferred to the appropriate location by scanning the barcodes on the internal management labels. When products are stored on the storage shelves, their GS1 barcodes are scanned again to prevent misplacement.

Picking and dispatching operations

Picking lists are issued by the management system in accordance with the order details. At this time, this system refers to the lot number of the target item in their management system in order to select the location of the product that

Figure 1.2.1.3-2 Automated warehouse



Figure 1.2.1.3-3 Storage shelves



has the oldest lot number. Lot numbers are also recorded in the delivery history for the relevant customer to ensure that products with newer lot numbers than those of the previous delivery are always delivered.

At the warehouse, palletised products are automatically transported to the shipping port in accordance with the picking list. After the picking has been completed, the pallet is automatically transported back to its previous location. When products are picked from the storage shelves, their GS1 barcodes are scanned using a handheld terminal to ensure that there are no picking errors. Before product shipment, the GS1 barcodes are scanned one more time to check that the ordered items have been correctly picked and carried. Once that has been done, the items are dispatched.

1.2.1.4 Workflow and barcode usage at the JUST Supply Centre (Figure 1.2.1.4-1)

Warehousing operations

Products managed at the JUST Supply Centre are also subjected to a receiving procedure at the Logistics Centre and in-house labels are attached there. Following the same operations as those used at the Logistics Centre, the GS1 barcodes are scanned for confirmation before the products are stored on shelves at the location indicated by the respective in-house labels. Some products may be repackaged into smaller quantities according to the needs of the relevant hospital (e.g., 100 syringes may be repackaged into 10 batches of syringes). After that, GS1-128 symbol labels are newly printed and attached to the subdivided packages (Figure 1.2.1.4-2).

Picking operations

GS1 barcodes are scanned using a handheld terminal during the picking process, as well. At

Figure 1.2.1.4-1 Supply Centre



Figure 1.2.1.4-2 Repackaged products with GS1-128 barcodes attached



the same time, the GTINs, lot numbers and expiration dates are checked. Following the same operations as those used at the Logistics Centre, the inventory data, including lot numbers, is managed to ensure that products are picked from the oldest lot. If a product is about to expire or has already expired, the system issues an alert to prevent the product from being shipped and allow staff to check the details and take the required action.

Dispatching operations

The GS1 barcodes for the picked products are scanned again for inspection. Upon completion of the inspection, cards that are used to control the consumption of products (called 'SPD cards' in Japan) and reimbursement labels, which are required by hospitals, are issued and attached. After that, the products are transported to the contracted medical institutions.

1.2.1.5 Advantages of using barcodes

The use of barcodes is essential in delivering the level of efficiency required to process large amounts of incoming and outgoing shipments within limited timeframes using a limited number of staff. In fact, the Logistics Centre sometimes receives more than 10,000 products per day. Thanks to barcodes, however, only about 15 people are needed to handle such product volumes. In the past, when it was necessary to rely on visual confirmation for picking, products that looked similar had to be stored in completely separate locations to prevent mistakes. However, the use of barcodes has eliminated the need to carry out such work and improved accuracy. In addition, since lot numbers and expiration dates are encoded in GS1 barcodes, the management of product expiration has been automated, which has helped prevent unnecessary disposals resulting from product deterioration or expiration.

1.2.1.6 Future tasks

According to TOMIKI, 'The widespread use of GS1 barcodes has improved operational efficiency and accuracy'. However, we found many cases where the symbols used and the items displayed did not comply with MHLW notifications or GS1 rules, and these cases have actually led to confusion in the Logistics Centre. Such problems occur not only at TOMIKI but also at medical institutions and the like. We hope that the 2019 revision of the Pharmaceuticals and Medical Device Act will provide a valuable opportunity to raise awareness that the correct placement of GS1 barcodes is extremely important.

1.3 Transport & Logistics

1.3.1 EPC/RFID pilot at a construction site: HASEKO Corporation

HASEKO Corporation, a Japanese construction company specialising in condominium construction, is piloting the supply chain visualisation of construction components using EPC/RFID at one of their construction sites. Construction workers are assigned to construction sites based on the strict construction schedule for each site, so ensuring that the required construction components are appropriately delivered to the relevant sites is crucial to facilitating smooth construction processes.

1.3.1.1 Pilot system overview

In this pilot, a UHF-band passive RFID tag is attached to each construction component by its manufacturer. 'On-metal RFID tags' are used for some construction components made from metal substances. The SGTIN EPC scheme is used as an identification key scheme for these construction components. Each RFID tag also has a printed QR code that carries a hexadecimal string of binary encoding for the corresponding SGTIN EPC. The QR code can be used when RFID tag cannot be read for some reason. Figure 1.3.1.1-1 shows an example of an RFID tag.

Based on unique identification keys encoded in the RFID tags, a cloud-based information system collects data on supply chain events such as shipment from the manufacturer, reception at the construction site, and installation in the building. Location information is essential for these events. A QR code containing proprietary location information is shown at each room or other location in the construction site, as shown in Figure 1.3.1.1-2.

Figure 1.3.1.1-2 QR code for location information at a room entrance



The handheld terminal shown in Figure 1.3.1.1-3 is used to capture the SGTIN EPCs in RFID tags and the location information in QR codes.

After capturing those data, the handheld terminal posts it in the information system as a supply chain event. After that, the information system can display the collected supply chain events in a web browser on a tablet.

1.3.1.2 Various construction components with RFID tags

Various kinds of construction components, including drainage pipe connectors shown in Figure 1.3.1.1-1, are RFID-tagged in the pilot. Some examples are shown below.

Figure 1.3.1.1-1 RFID tag attached to a connector for drainage pipes



Figure 1.3.1.1-3 Handheld RFID barcode reader used in the pilot



Figure 1.3.1.2-1 Modular bathroom with an RFID tag attached to its roof plate



Figure 1.3.1.2-1 shows a completed modular bathroom. It is delivered to the construction site as a set of half-finished products and then assembled in the relevant room at the site. An RFID tag is attached to each set of modular bathroom parts.

Figure 1.3.1.2-2 shows an RFID tag attached to the frame of a window. The tag is attached to the lock component, which is made of resin. However, the RFID tag is surrounded by metal components, so its reading range is shorter.

Figure 1.3.1.2-2 RFID tag attached to the frame of a window



Figure 1.3.1.2-3 shows RFID tags attached to wooden planks for furniture, such as shelves. In contrast to the above-mentioned modular bathrooms, an RFID tag is attached to each of the planks that comprise a set of shelves. If any planks are missing from the construction site, the shelf manufacturer is requested to find them or deliver alternatives. This business practice strongly motivates the manufacturer to attach

Figure 1.3.1.2-3 RFID tags attached to planks for furniture (e.g., shelves)



RFID tags to each of the planks for its shelf products.

These photos show the various construction components allocated to each room. The RFID tags are read by a handheld terminal to record their allocation and installation in the rooms. These tags are also read when the construction components are received at the construction site. Figure 1.3.1.2-4 shows a worker reading RFID tags at the time of reception.

Figure 1.3.1.2-4 RFID reading at the reception of construction components



Contrary to the examples given above, some construction components are not RFID tagged in this pilot. Typical examples of these components are electronic wires and air ducts. They are received at the construction site in a rolled form, cut into appropriate lengths, and then installed in the rooms. In other words, variable measure components are not RFID tagged in this pilot.

1.3.1.3 Future prospects

HASEKO Corporation now directly asks its group manufacturers and third-party manufacturers to attach RFID tags to their construction component products. It is widely recognised that the harmonised approaches adopted in the Japanese construction industry will be important in allowing manufacturers to reduce the burden of adopting RFID tags if many construction companies implement RFID systems at their construction sites. GS1 Japan continue to talk with HASEKO Corporation and the Japanese construction industry as a whole to support and realise a harmonised approach to digitalisation under GS1 standards.

1.3.2 Pilot and feasibility study on Japanese sake: Supply chain efficiency and value creation utilising EPC/RFID

GS1 Japan has strengthened its engagement with manufacturers of Japan’s national beverage, sake, by conducting several EPC/RFID pilot studies aimed at improving sake supply chain efficiency for many years.

In 2020, the Ministry of Economy, Trade and Industry (METI) established a committee for sake supply chain efficiency. This committee conducted some pilots using EPC/RFID as part of its research project, in which GS1 Japan participated as well. Since RFID is an indispensable technology for promoting future supply chain efficiency, METI is also focusing on this technology.

There were three main objectives of this series of pilots, and two additional verifications were also conducted. These objectives were based on issues that had been identified when GS1 Japan conducted demonstration experiments with sake manufacturers in the past. To achieve each of these objectives, METI had four sake breweries cooperate in the pilot studies.

Table 1.3.2-1 Pilot objectives and cooperating partner

Objective	Cooperating sake brewery
(1) Labour saving in inventory management	Shata Shuzo Co., Ltd.
(2) Prevention of unauthorised resale	Asahi Shuzo Co., Ltd.
(3) Promoting communication with consumers	Sekiya Brewery Co., Ltd.
Additional verification: Temperature monitoring for overseas exports	NANBU BIJIN Co., Ltd.
Additional verification: Improving the efficiency of source tagging	Asahi Shuzo Co., Ltd.

1.3.2.1 Labour saving in inventory management

Under the Liquor Tax Law, sake breweries are required to provide the government with detailed reports on their inventories from the production stage (even before the sake goes into the supply chain). Many manufacturers bottle their sake and store it in their warehouses, where a lot of time and manpower is spent on manual inventory management. Since sake bottles are heavy, it also takes a lot of time and effort to remove

bottles from shelves located at the back of the warehouses in order to check the brand name.

With the cooperation of Shata Shuzo, we conducted a pilot using EPC/RFID with a view to reducing the workload associated with inventory management and enabling the quantity and location of each product to be determined more efficiently.

The procedure for this pilot was as follows.

- EPC/RFID tags were attached to the P-boxes (plastic containers for sake) and the pallets on which the boxes were stacked.
- When sake bottles were packed in P-boxes and stacked on pallets, information concerning the 'bottles and P-boxes' and the 'P-boxes and pallets' was linked.
- Information on the pallets was linked to their location in the warehouse.
- A system was employed to manage the above information, with the information being referenced based on the date, time, and place.
- The number of units and location for each type of product were determined through the above operations.

This pilot was conducted using only 300 bottles of one single brand. Although the experiment was limited in scope, Shata Shuzo was able to check the inventory for the location of sake bottles within their warehouse without having to remove bottles from the P-boxes.

The current management system relies on paper ledgers and human memory, which is a labour-intensive process that makes the work dependent on individual skills. Using an EPC/RFID-based information system for inventory management makes it possible for the quantity and location of products to be determined automatically, thereby resulting in significant labour savings.

1.3.2.2 Prevention of unauthorised resale

Since online marketplaces allow individuals to buy and sell goods freely, the unauthorised resale of rare Japanese sake for high prices has become a major problem. In many cases, such resold sake are poorly stored and have lost their taste, which may damage the brand. Therefore, to prevent the resale of sake, this pilot established a system that allows sake manufacturers to manage their own products individually. Using this system, the manufacturers can accurately monitor and ensure the number of bottles shipped by the

manufacturer and the number of bottles handled by the distributors (sake dealers who purchase sake directly from the manufacturer).

Due to the limited time frame of the experiment and the impact of the COVID-19 pandemic, it was not possible to get the cooperation of actual wholesalers and retailers. However, various information (e.g., what brand of sake was shipped, when it was shipped, where it was shipped from, and where it was shipped to) was recorded using EPCIS standard. As a result, it was confirmed that EPCIS visibility data (what, when, where, and why) for shipping and receiving at each point in the sake supply chain can be handled without problem.

1.3.2.3 Promoting communication with consumers

Recently, an increasing number of sake manufacturers are operating directly managed sales outlets and restaurants so that they can communicate directly with consumers, promote the selling points of their sake, and see how consumers react to it.

In 2020, Sekiya Shuzo opened the restaurant Koji MARUTANI under its direct management in Hisaya-odori Park in the heart of Nagoya, where this pilot was conducted. Due to the COVID-19 pandemic, the restaurant had to minimise conversation between customers and waiting staff. Nonetheless, the restaurant wanted to give customers detailed information about the sake that they serve.

Therefore, a system that reduces the risk of COVID-19 infection but still communicates information on sake was created for this pilot. The system for this pilot worked as follows.

- EPC/RFID tags were attached to sake bottles stored in the refrigerator and NFC tags were attached to the glasses that were used to serve sake to customers.
- When the sake was poured into a glass, the SGTIN information from the EPC/RFID tag on the bottle was associated with the NFC tag on the glass.
- When the customer read the NFC tag on the glass by using a smartphone provided at the table, a website was displayed to provide the customer with detailed information about the sake.
- The smartphone could also be used to reorder the same sake or direct the user to an e-commerce site.

- The NFC-tagged glasses were cleaned after serving and then reused.

As a result, customers were able to order sake without having to call the waiter, thereby reducing the amount of conversation between customers and waiting staff during the pandemic. At the same time, they were also able to access detailed information about the sake.

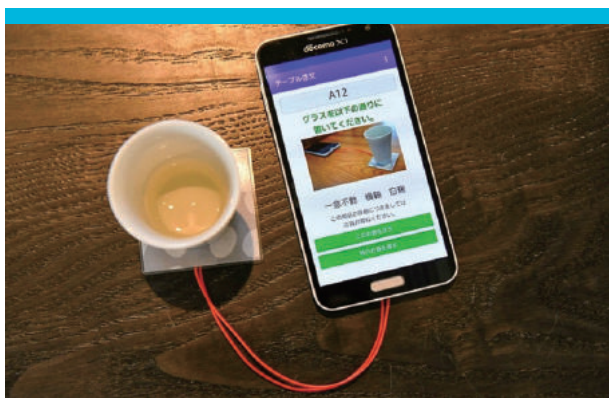
Figure 1.3.2-1 RFID tag attached to a sake bottle



Figure 1.3.2-2 Reading the RFID tag on a glass of sake



Figure 1.3.2-3 Information of sake displayed on a smartphone



Source for Figures 1.3.2-1 to 1.3.2-3: SAKETIMES (https://jp.sake-times.com/special/press/pp_sakebar-marutani)

Additional verification: Temperature monitoring for overseas exports

In light of the increasing demand for quality control of sake during transportation, a system for continuous temperature control during the transportation of overseas exports was established in a pilot conducted with the cooperation of NANBU BIJIN.

In this pilot, the following system was used to monitor the temperature of frozen sake.

- RFID tags with temperature measurement and recording functions are attached to the surface and inside of the case containing the exported product.
- At each stage of the transportation process from the sake manufacturer to the consumer, the RFID tags could be read by the transporter's and consumer's smartphones to view the recorded temperature history.
- The manufacturer was able to check and analyse the collected temperature history to monitor the quality control status of the target product during transportation.

In this project, we used a hybrid type of UHF and NFC RFID tags in consideration of the reading equipment used at each site. When a reading environment for UHF tags becomes available in the future, it will be possible to take advantage of the superior characteristics of UHF tags, including the long-range reading of multiple tags.

Additional verification: Improving the efficiency of source tagging

In past pilot projects conducted by sake manufacturers and GS1 Japan, EPC/RFID tags were attached to sake bottles manually. However, since manual application is time-consuming, source tagging needs to be streamlined with a view to realising the actual implementation of EPC/RFID systems.

In a pilot conducted in cooperation with Asahi Shuzo, an actual labelling machine for source tagging was used.

This test was conducted together with a label printing company by placing EPC/RFID tags into a printing machine. The results confirmed the efficiency of the source tagging process, and the RFID-tagged labels were successfully attached without slowing the actual labelling process at the Asahi Shuzo factory.

Conclusion

All of the sake manufacturers that participated in this study group advocated the importance and benefits of item-level management for sake products. Since the sake supply chain is less diverse and complex than the supply chains for the daily consumer goods sold at supermarkets, corner shops, and chain drug stores, the sake

industry is well suited to EPC/RFID-based supply chain management with source tagging by the manufacturers. Furthermore, the practical application of this technology is feasible.

Going forward, the findings of these EPC/RFID pilot studies will contribute to improving the efficiency of the sake supply chain.

1.4 B2C

1.4.1 B2B2C service with GS1 QR code

1.4.1.1 GTIN for product recall

In recent years consumers have been paying increasing attention to the safe use of products. The Consumer Affairs Agency in Japan alerts consumers to recalled products on their website and Twitter, and the agency uses GTIN to identify recalled products. This information is shared worldwide through OECD's recall portal website. Nowadays, GTIN is increasingly used to identify recall information as some other MOs do.

1.4.1.2 Sharing recall information with consumers using GS1 QR code

With a product recall system, ensuring that target users are promptly alerted when there is a recall is key. In order to help the users, scodt®, a smartphone app using GS1 QR code, was developed. This app is based on a system for the communication of risk. It ensures that information is conveyed to the target user of a product in the event of a recall, and that the user can easily take the necessary action.

The system is based on the patented 'Safety Check On-demand Technology (scodt®)', developed and filed by Yoshiaki WATANABE, and promoted by The Association for Product Liability (APL).

1.4.1.3 Service overview

The system works as follows:

After installing the app on their mobile device, users scan the GS1 QR code printed on the product label or product itself. This GS1 QR code provides three types of information: the GTIN, lot number and product URL. Users can then check the following information on their mobile device;

- Product status (e.g., whether the product has reached end of life or not and whether it has been recalled or not)
- Basic product information
- Product instruction manual
- Certificate of product quality testing, etc.
- Product expiry warning
- Directing users to other related information.

Figure 1.4.1.3-2 Applications of scodt®



For further information on their services, please visit APL’s website.

https://pl-taisaku.org/?page_id=2823 (only in Japanese)

Figure 1.4.1.3-1 Free GS1 QR code (scodt®) application



1.4.1.4 GS1 QR code case studies

<Trap products: Sakae industry>

Sakae Industry manufactures traps to catch all kind of animals from rats, marten and raccoons to bears. Sakae Industry was looking for a more effective tool to inform people about the correct installation of the traps (on site) because the traps need to be properly installed and used, otherwise there might be a risk for people nearby caused by escaping animals.

The company has devised a metal label with a GS1 QR code printed on it, which is attached to the body of the trap. This system frees users from needing paper instruction manuals at trap installation sites and ensures that the product information can be retrieved through a mobile device whenever and wherever required.

Animals are increasingly likely to invade human society as the population in Japan, especially in rural areas, decreases, and therefore services using GS1 QR code will continue to grow.

<Koji cosmetics: Sakura Koji Lab >

Sakura Koji Lab is a manufacturer that sells cosmetic products made from rice ‘koji’. Because

Figure 1.4.1.4-1 GS1 QR code attached vermin control trap



the ingredients in Sakura Koji Lab’s products differ from those of common cosmetics, adequate information on their usage and features need to be provided to customers. As Sakura Koji Lab exports its products internationally, it needs to provide detailed product information to its international consumers. A GS1 QR code is displayed on each product’s packaging, enabling users to check how to use the products via scodt®.

Recently, RFID tag is introduced to managing mesh boxes for agricultural products and metal logistic containers for motorcar parts.

In addition, the tag application is spread to various fields including management of library collections, healthcare items (medical devices and supplies) and construction materials.

Figure 1.4.1.4-2 GS1 QR for Cosmetics



<Processed foods: Joan International >

Joan International (Joan) is an importer and distributor of olive oil.

Recently, both sellers and consumers are becoming increasingly concerned about food safety and security with the introduction of the mandatory notification of voluntary recalls in Japan.

Joan has adopted this app in order to be able to inform consumers as soon as possible if the olive oil it sells is listed as a recalled product. Consumers can also scan the GS1 QR codes on the product packaging to obtain detailed information about the products’ characteristics.

1.4.1.5 Responsibility for product safety

In the field of industrial products and cosmetics, it is expected that consumers knowing how to correctly use products will have a significant effect in preventing undesirable accidents due to mistakes or misuse. In addition, the revision of the Food Sanitation Law, which includes mandatory reporting when voluntary recalls of foods or

other products are carried out, became effective on 1 June 2021. Furthermore, the revision of the Specified Commodity Transaction Law, which went into effect in July 2020, has strengthened the responsibilities related to selling for online retailers.

Much is expected of solutions using GS1 QR codes as a tool for users to use products correctly and safely.(within facilities or areas such as factories and warehouses).

Figure 1.4.1.4-3 GS1 QR for olive oil products



2. Services & Solutions

2.1 Increasing demand for GS1 QR codes to control freshness in general distribution

2.1.1 GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases

In September 2020, GS1 Japan published the GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases (hereinafter referred to as the 'Barcode Guidelines for Carton Cases', currently only available in Japanese).

This guideline outlines the rules and key points when using GS1 QR codes or other GS1 standard barcodes to encode GTIN, date information (production, best-before and expiration date) and lot numbers on carton cases.

Figure 2.1.1-1 GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases



2.1.1.1 Background of this guideline

50 years have passed since the first GTIN was used to identify products. In recent years, more granular information management has been required. For example, information such as best-before date or expiration date is important in the food industry, where inventory control (management) for strict first-in first-out (FIFO for freshness) is required.

In Japan, if FIFO fails, products will not be accepted by retailers and this may lead to food loss. But most date information on carton cases are displayed by the printing of text and wholesalers manually enter these data into their inventory management system. In addition, as Japan's labour shortage worsens, operations that rely on manual work are becoming more and more difficult. Thus, expectations and needs for

systematic and IT-based solutions have been growing.

In recent years, some companies have introduced OCR (Optical Character Recognition/Reader) devices, but fonts and formats for text data have not been standardised. A few manufacturers have introduced proprietary barcodes to manage date information, but of course these barcodes cannot be used between companies.

We therefore have made the Barcode Guidelines for Carton Cases with leading Japanese manufacturers, wholesalers and retailers. The products targeted by this guideline is not only processed foods, beverages and confectionery, but also daily necessities and general merchandise.

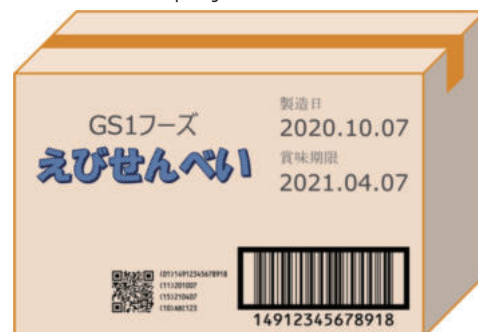
2.1.1.2 What data should be encoded? Which barcode should be used?

The guideline defines the data items and barcode symbols to be printed on the outer cases of consumer goods.

As the barcoding data, we have selected four items of information: GTIN, production date, best before or expiration date and lot number. Production date can be omitted if this data is not indicated on the carton case.

As the data carrier, we recommend GS1 QR codes or GS1-128 symbols in order to make this guideline consistent with the Source Marking Guideline for Raw Materials published in 2017. In Japan, expectations for GS1 QR codes are high because they are more compact than GS1-128 symbols and have an error correction feature.

Figure 2.1.1.2-1 Image of GS1 QR code displayed on cardboard



2.1.1.3 Related moves by the Japanese government

This guideline is aligned with some activities of the Japanese government. The Action Plan for Standardisation of Logistics in the Processed Food Sector was developed by the Ministry of Land, Infrastructure, Transport and Tourism in March 2020. In this action plan, GS1 barcodes are referred to for use in the standardisation of outer labelling.

Furthermore, a pilot test on using QR codes to reduce inspection time was conducted as a government project in 2020.

This pilot verified how much inspection time and costs can be reduced by using QR codes which encode the GTIN and date information. As a result, time savings of up to 40 minutes for 800 delivery boxes have been confirmed.

2.1.2. Verification of GS1 QR Code Direct Printing on Carton Cases

2.1.2.1 How to display the GS1 QR code on carton cases

With our two guidelines, expectations for GS1 QR codes are growing. Two methods are considered for displaying GS1 QR codes on carton cases: labelling and direct printing. The scope of this project is direct printing.

Direct printing on carton cases has been widely used because it reduces the cost of labels. However, with direct printing, it is difficult to ensure sufficient contrast, because the background colour of the cardboard case is brown. We, therefore, undertook the Verification of GS1 QR Code Direct Printing on Carton Case Project to verify that the quality required for distribution can be ensured.

2.1.2.2 Project overview and results

The aim of this project is to check the quality of the printing of GS1 QR codes on carton cases

using inkjet printers and to provide operational considerations.

We made six different X-dimensions of samples: 0.375 mm (0.25 mm on one printer because of resolution), 0.5 mm, 0.743 mm, 1 mm, 1.5 mm and 1.75 mm. The 0.743 mm, 1 mm and 1.5 mm samples are standard size samples as defined by GS1 General Specifications. The results of verification is shown in Figure 2.1.2.2-1.

99% of the standard size (X-dimension 0.743-1.5 mm) symbols had 1.5 of ISO symbol grade or higher and the maximum symbol grade was 1.9. On the other hand, many of the smaller samples (X-dimension 0.25-0.5 mm) were lower than 1.5, and the symbol grade tended to decrease as the X-dimension decreased.

We read these samples using several barcode readers. The reading rate increased with the size of the symbol. In particular, all standard size symbols were read successfully.

2.1.2.3 Key points when printing GS1 QR codes on carton cases

From the results above, we have concluded that the following three points should be kept in mind when printing GS1 QR codes directly on cardboard.

Follow the standard size specification. If the X-dimension deviates from the standard size, especially if it is smaller, the overall quality tends to deteriorate.

Use the ink recommended by the printer manufacturer and keep the default density settings.

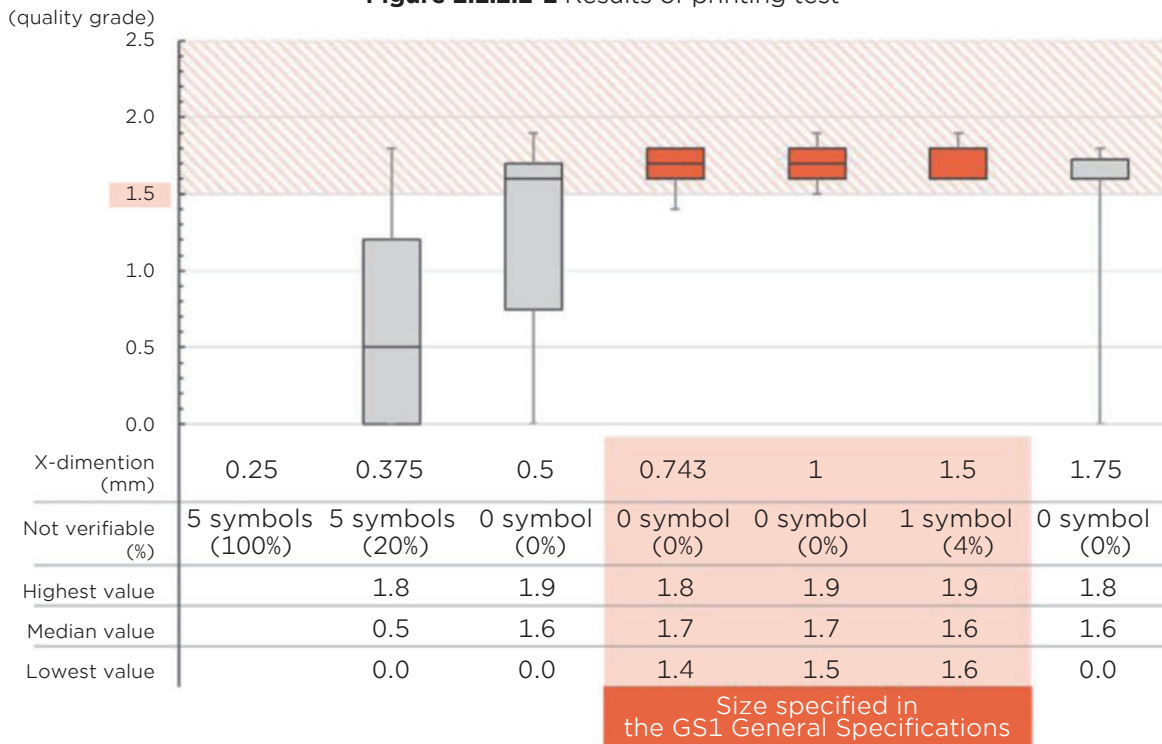
Before production, be sure to conduct a pre-test with actual cardboard material to check the quality.

Of course, we do not necessarily recommend direct printing over label printing, as the latter provides a better contrast than direct printing. Our intention is to give advice to users who want to use direct printing.

Figure 2.1.2.1-1 Labelling or Direct Printing



Figure 2.1.2.2-1 Results of printing test



2.2 GS1 AIDC Standards Conformity Check Guide and GS1 AIDC Standards Self-Declaration of Conformity Service

The GS1 AIDC Standards Conformity Check Guide (hereinafter referred to as this 'Check Guide') provides basic information on GS1 standards and checklists to ensure that barcode-related products conform to the GS1 standard.

We have developed this Check Guide with barcode related manufacturers and distributors.

This guide is intended to be read by persons at barcode-related software/hardware companies which provide barcode encoder/decoders,

Figure 2.2-1 GS1 AIDC Standards Conformity Check Guide



printer or scanners. These companies can utilise the Check Guide in order to understand GS1 standards correctly and assess how well their barcode-related products are conforming to the GS1 standards.

2.2.1 Outline of GS1 AIDC Standards Conformity Check Guide

This Check Guide is composed of two main parts.

The first half of the Check Guide summarises important information related to GS1 standards.

Specifically, this part covers GS1 identification keys, GS1 Application Identifiers (AIs), overviews of each GS1 standard barcode, HRI, FNC1, barcode size, truncation, and more.

The second half provides checklists to confirm if the products that generate, print or capture GS1 standard barcodes are equipped with the required functions.

The product types that the checklists are intended to be used with are GS1 barcode generation software, printers, scanners and reading software. The checklists are provided by product categories and barcode symbol types.

Each checklist consists of mandatory and optional check items.

Mandatory items are functions that are vital to comply with GS1 standards. These include capabilities for generating and/or capturing symbols in accordance with ISO and other appropriate standards, calculating check digit automatically (or issuing an alert if the manually calculated check digit was incorrect).

Optional items are user-friendly and desirable functions for users to be able to generate and capture correct GS1 standard barcodes. For example, a function to check the length of GS1 AI data strings and a function to check if AI data strings contain unacceptable characters.

The Check Guide can be downloaded from our website (only available in Japanese).

<https://www.dsri.jp/standard/gs1/index.html#gs1guide>

2.2.2 Launch of GS1 AIDC Standards Self-Declaration of Conformity Service and publication of List of GS1 AIDC Standards Self-Declared Conforming Products

In addition, we have been providing since April 2020 the GS1 AIDC Standards Self-Declaration of Conformity Service.

The GS1 AIDC Standards Self-Declaration of Conformity (hereinafter referred to as 'SDC') is a declaration proved and declared by the manufacturers themselves about their AIDC products. Manufacturers confirm the functions of their product with the checklist provided in the Check Guide. Provided that the product fulfils all the mandatory items on the checklist, it can be submitted as an SDC product. Submitted SDC products will be listed on our website. For system vendors, it is an opportunity to promote their products that comply with the GS1 standard. For users looking for barcode-related products, it is a reference to help them find GS1 standard compliant products.

GS1 AIDC Standards SDC Products List (hereinafter referred to as the 'Product List') can be found at the following URL.

www.dsri.jp/partnership/member_products/
(only available in Japanese)

2.2.3 Product List outline

Product information is listed by product category (barcode generator, barcode printer, barcode scanner and barcode decoding software).

In this Product List, information on manufacturer name, product model name, product page URL, contact information and compatible GS1 barcodes for each product can be browsed (Figure 2.2.3-1).

The self-declaration document for each product can be found by clicking on 'More details here' .

2.2.4 Supporting activities promoting correct usage of GS1 standards

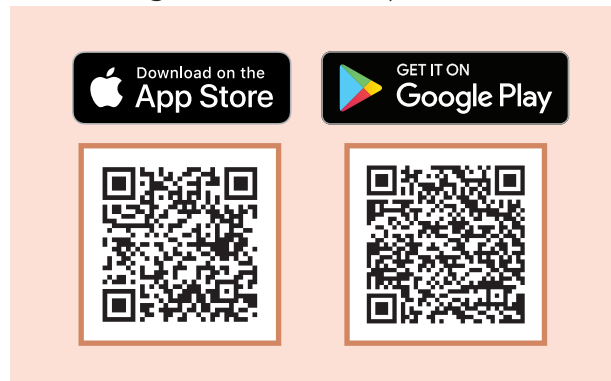
The Check Guide and the SDC Service are intended for promoting the proper use of GS1 standards. Therefore, the Check Guide covers basic information on GS1 standards and is designed to be as easy to understand as possible for non-experts. We hope that people who are not carrying out SDC will also read the Check Guide to review their products.

Figure 2.2.3-1 List of SDC Products on the web page



As a similar effort, we provide a smartphone app called GS1 Japan Scan, which allows users to check whether a barcode is in line with the GS1 standards.

Figure 2.2.4-1 GS1 Japan Scan



2.3 Trends in the Healthcare Sector

GS1 DigitalLink format introduced for e-labelling inserts

In Japan, amendments to the Pharmaceuticals and Medical Devices Act (PMD Act) were passed through the Diet in November 2019. Two measures on barcode labelling were incorporated in the law to enhance patient safety: one for providing electronic information (e-labelling) instead of paper package inserts, and the other for improving traceability. The barcode labelling for regulated healthcare products, ethical pharmaceuticals and medical devices had been conducted in accordance with the notices from the Ministry of Health, Labour and Welfare (MHLW). Furthermore, it will become legally mandatory from December 2022. Before that, it has been decided that barcodes will be used in e-labelling starting in August 2021. (details to follow) The strategy of barcode labelling in Japan is shown in Figure 2.3-1 with a timeline.

GS1 barcodes have been promoted as the only standards for pharmaceuticals and medical devices; **GS1 DataBar** (limited or stacked) and GS1-128 for pharmaceuticals, and GS1-128 and GS1 DataMatrix for medical devices. HIBCC and ICCBBA, which additionally are accepted by UDI regulations in other countries, are not allowed.

The percentage of pharmaceuticals with barcoding has almost reached 100%, covering everything from primary packages such as vials and blisters to tertiary packages. The percentage of medical devices with barcoding is less than that for pharmaceuticals at present, but more than 95% of secondary packages have been barcoded and most high-risk medical materials

such as catheters and orthopaedic materials have GS1 barcodes displayed even on primary packages.

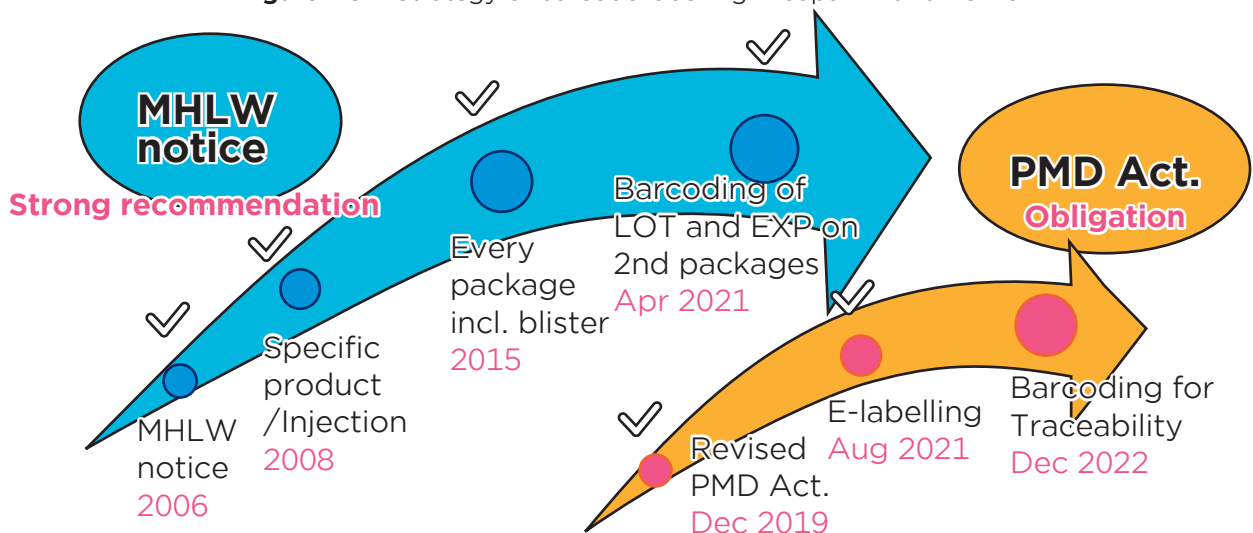
✓ **GS1 DataBar:** The reasons that Japan use GS1 DataBar is:

1. the decision to use GS1 barcodes was made quite early compared to other countries and GS1 DataBar was the only GS1 standards to use small packages at the time,
2. the industries in some of other countries including the US were starting to mark with GS1 DataBar.

2.3.1 E-labelling started

The package inserts which describe the effect, side effect and other information important to healthcare providers had to be put into each secondary package. However, because the information on inserts is frequently revised, the inserts may become out-of-date while they are inventory. It had been pointed out that the latest information may not reach healthcare providers properly. Also, paper package inserts lead to the waste of paper resources. Therefore, it was decided in the revised law to abolish paper package inserts and provide information digitally instead. According this e-labelling measure, all digitised package inserts information (e-leaflets) are registered on the website of Pharmaceuticals and Medical Devices Agency (PMDA), while being linked to the GTIN. A redirect page was built in

Figure 2.3-1 Strategy of barcode labelling in Japan with timeline



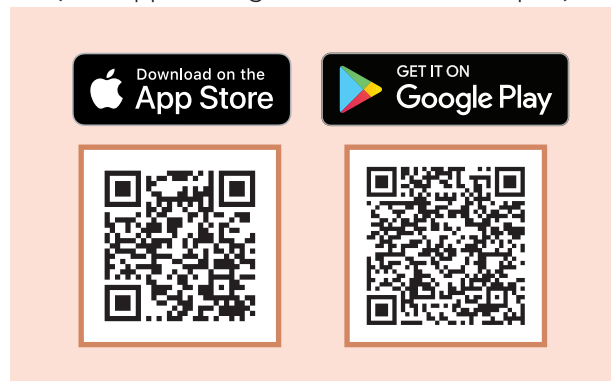
the PMDA website and it is possible to browse the e-leaflets via the redirect page. The GS1 Digital Link standard is used for the URI format (Figure 2.3.1-1).

Though there is a two-year grace period for linking GTINs to e-leaflets, almost all pharmaceuticals have already practically been registered. In addition, although the scope for e-labelling is secondary packages, GTINs of primary and tertiary packages of pharmaceuticals have also been registered. This means that the data from all packages, including ampules and blisters, can be browsed.

2.3.2 Tenbun Navi, an app for mobile devices

Tenbun Navi is an app for smartphones and tablets to browse e-leaflets on PMDA website. By scanning GS1 barcodes, the app automatically converts GTIN to URI. It was developed jointly by the Federation of Pharmaceutical Manufacturers' Associations of Japan, the Japan Federation of Medical Devices Association and GS1 Japan. It can be downloaded from the App Store and Google Play for free (Figure 2.3.2-1).

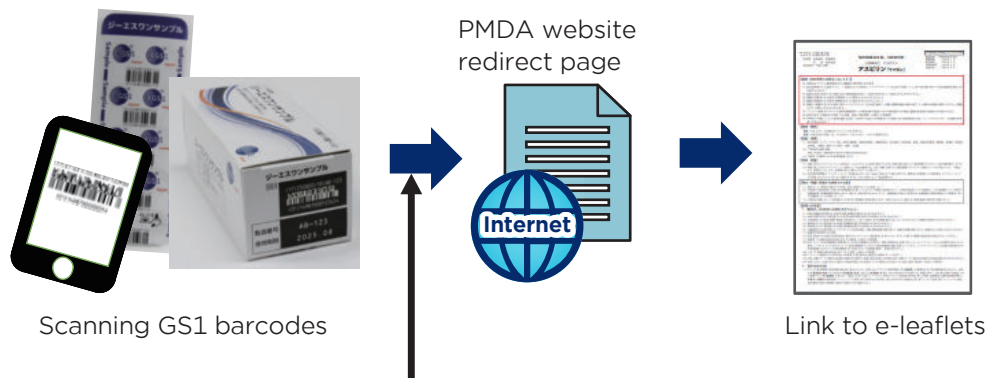
Figure 2.3.2-1 QR codes for installation of Tenbun Navi
(This app is designed for use within Japan)



2.3.3 Usage of GS1 barcodes for patient safety

In Japan, the identification of healthcare products with GTIN has been promoted for more than a decade by public-private collaboration, and now, almost all healthcare products have GS1 barcodes. As a result, the transition to e-labelling is progressing smoothly. According to the amendment of the PMD Act, the barcoding for traceability becomes stricter from December 2022. At present, the usage of GS1 barcodes at hospitals for patient safety is so far limited to some advanced hospitals; however, the revised PMD Act would be an opportunity to expand the use of GS1 barcodes and GTINs.

Figure 2.3.1-1 GS1 Digital Link URI used to link to redirect page on PMDA website



```
https://www.pmda.go.jp/PmdaSearch/bookSearch/01/{GTIN}
e.g. https://www.pmda.go.jp/PmdaSearch/bookSearch/01/04512345000035
```

2.4 GS1 Japan Data Bank (GJDB)

GS1 has announced a policy that is aimed at urgently creating and offering a centrally managed referable system for information that is interlinked with GS1 identification keys, such as GTIN and GLN, while also managing and operating GS1 Company Prefix allocations much more strictly.

Based on this policy, GS1 is launching a new database service called the 'GS1 Registry Platform', which stores thin information on GS1 Company Prefixes and GS1 Identification Keys, including GTIN and GLN, and provides essential information for identifying products and/or locations.

In principle, users need to be routed through the local GS1 MO (GS1 Japan in Japan) service to register for the GS1 Registry Platform, and the GS1 Japan Data Bank (GJDB) service provides the entry point for Japanese users.

Up and running since October 2019, GJDB employs a system that offers easy registration and management of GTINs and their associated information and allows the seamless release of the registered product data to the GS1 Registry Platform and domestic database systems.

Following GJDB initial release, brand owners can easily navigate the GTIN allocation, GTIN management, and barcode symbol generation/download processes. Further functional enhancements are planned for future releases.

2.4.1 Challenges related to product information in Japan

In Japan, there are a lot of brand owners of small and medium-sized enterprises (SMEs), and they are struggling significantly with the registration and management of product information.

In contrast, the wholesalers and retailers that handle the products produced by these SMEs are suffering from inefficiencies in product data exchanges.

2.4.1.1 Challenges related to product information registration and management

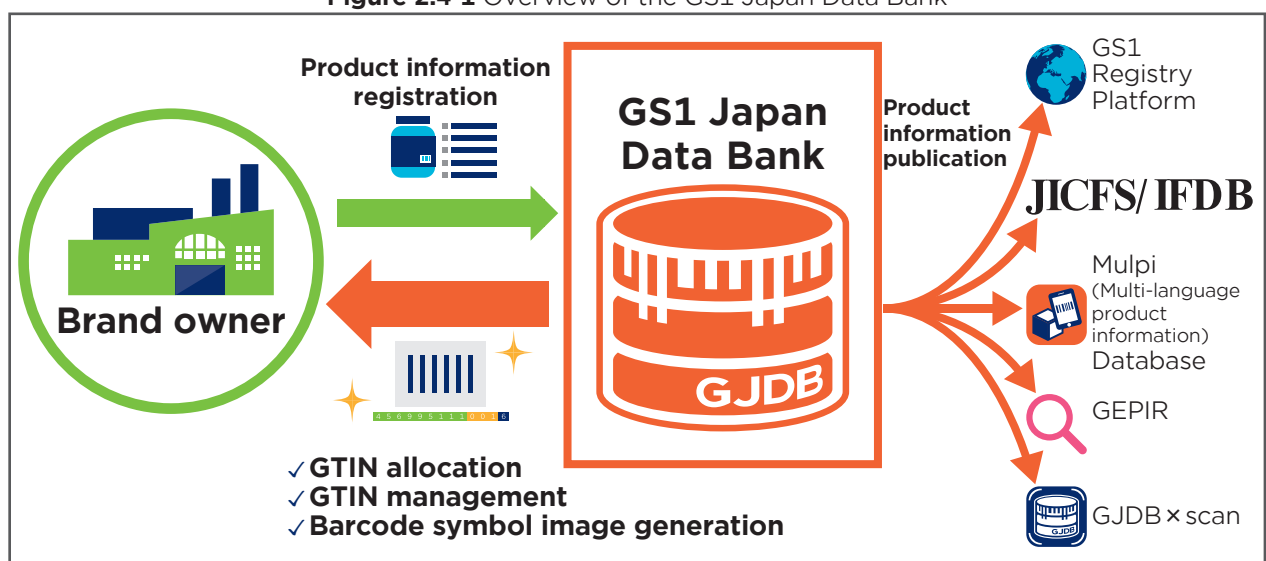
Determining whether they can afford a product management system from the perspective of cost-effectiveness is a big decision for SMEs.

Therefore, companies who cannot acquire such systems mostly process their product information by keeping handwritten records or entering data in a spreadsheet.

However, if GTINs are allocated manually without sufficient knowledge of the GTIN structure (composed of three elements: a GS1 Company Prefix, an item reference, and a check digit), there is an increased risk of incorrect product information registration, which includes registering incorrect GTINs and allocating the same GTIN to different products (duplicate).

Incorrect GTIN allocation also causes problems for the brand owner's trading partners, including their wholesalers and retailers, as GTINs are the

Figure 2.4-1 Overview of the GS1 Japan Data Bank



key to information throughout the value chain.

2.4.1.2 Challenges related to product information exchanges

Retailers and wholesalers need to receive the correct product information in a timely manner, but they have been struggling to acquire this information.

In Japan, a database that centrally manages all the product information that retailers need for reference has yet to be developed.

As a result, wholesalers and retailers have to ask the brand owners for the necessary product information.

The product information is transmitted from the brand owners in various ways, such as entering the data into the retailer’s Web system or sending retailer-specific spreadsheets with the required data as email attachments.

Manual operations such as these impose an undesirable burden on the brand owners and involve cumbersome operations, which may result in entries containing erroneous information even for the same product or entries containing inconsistent information.

Product information is vital for order placement, logistics, and sales operations, so incorrect information affects the entire business.

2.4.2 Functions offered by GJDB

GJDB initial release has been prepared mainly to mitigate issues concerning product information

registration and management or product information exchanges, including GTIN allocation. The initial release offers the following functions.

- (i) Easy allocation of GTINs
- (ii) Easy management of GTINs
- (iii) Easy generation of barcode symbols for GTINs
- (iv) Seamlessly interlinked operations with domestic databases.

2.4.2.1 Easy allocation of GTINs

GTINs must be allocated correctly by using the setting item references according to the rules and then calculating the check digit.

This process can be a burden, especially for SMEs, but GTIN allocation has been made easy by the release of GJDB service, which requires only the following three steps.

<Three steps of GTIN allocation>

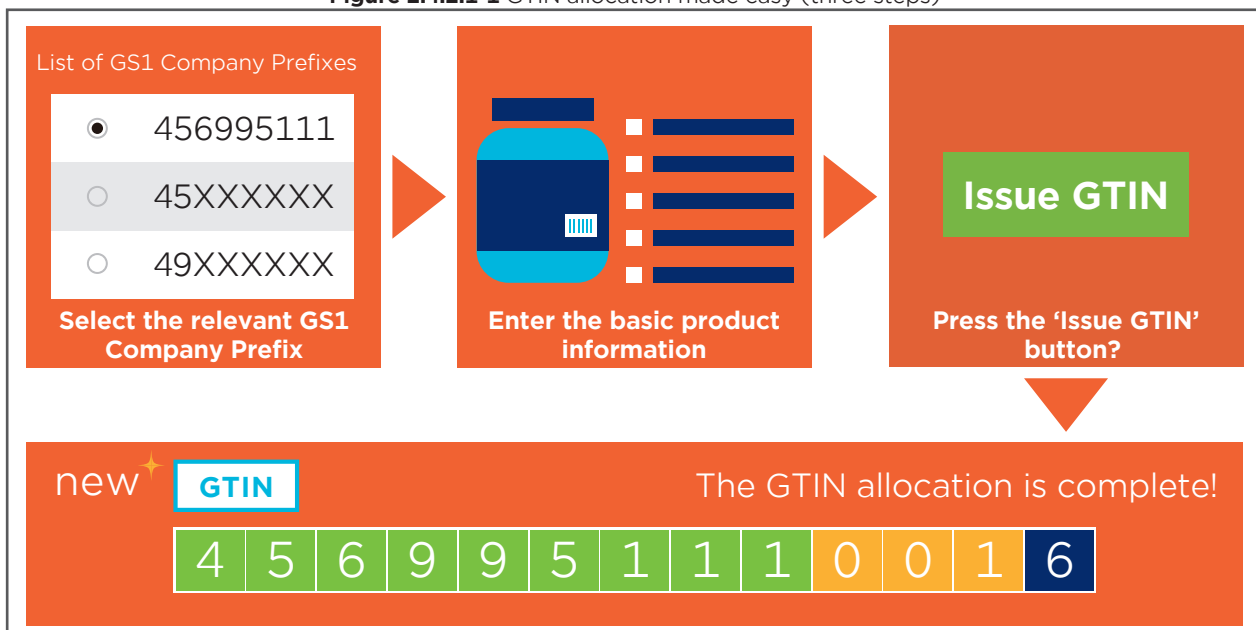
- (i) Select the relevant GS1 Company Prefix
- (ii) Enter the basic product information
- (iii) Press the ‘Issue GTIN’ button
- (iv) Seamlessly interlinked operations with domestic databases.

2.4.2.2 Easy management of GTINs

The main reason for using GTINs is their global uniqueness.

Any reduplication of GTINs causes confusion for

Figure 2.4.2.1-1 GTIN allocation made easy (three steps)



the stakeholders who handle the products, including wholesalers and retailers, and undermines the supply chain efficiency.

To avoid such confusion, each brand owner must make sure to allocate GTINs correctly without reduplication.

Brand owners do not need to worry about GTIN reduplication once they have registered all their products to GJDB because doing so will ensure that the GTINs are correctly managed.

Furthermore, the GTIN allocation status, including counts for the allocated GTINs (and the remaining unallocated GTIN count), for each GS1 Company Prefix is visualised using a coloured bar chart.

2.4.2.3 Easy generation of barcode symbol images for GTINs

Brand owners need to allocate GTINs for their products and then display their barcodes.

If the brand owner leaves this work to a printing company, they just need to provide the GTIN data. However, if the brand owner decides to carry out this process by themselves, they need to find suitable software to generate the symbol and then display it on the product.

SMEs that are familiar with the process should have no problem printing the barcode, but those that are not familiar with may find generating the symbol for the allocated GTIN difficult.

By utilising GJDB functions, brand owners can easily generate the necessary EAN/UPC symbols and download them in an electronic format after publishing the product information to GJDB and its connected database.

2.4.2.4 Seamlessly interlinked operations with the GS1 Registry Platform and domestic databases

Brand owners expect their products to be widely sold. Given this, they need to share accurate product data among their stakeholders and make sure that the data is well known to the parties concerned.

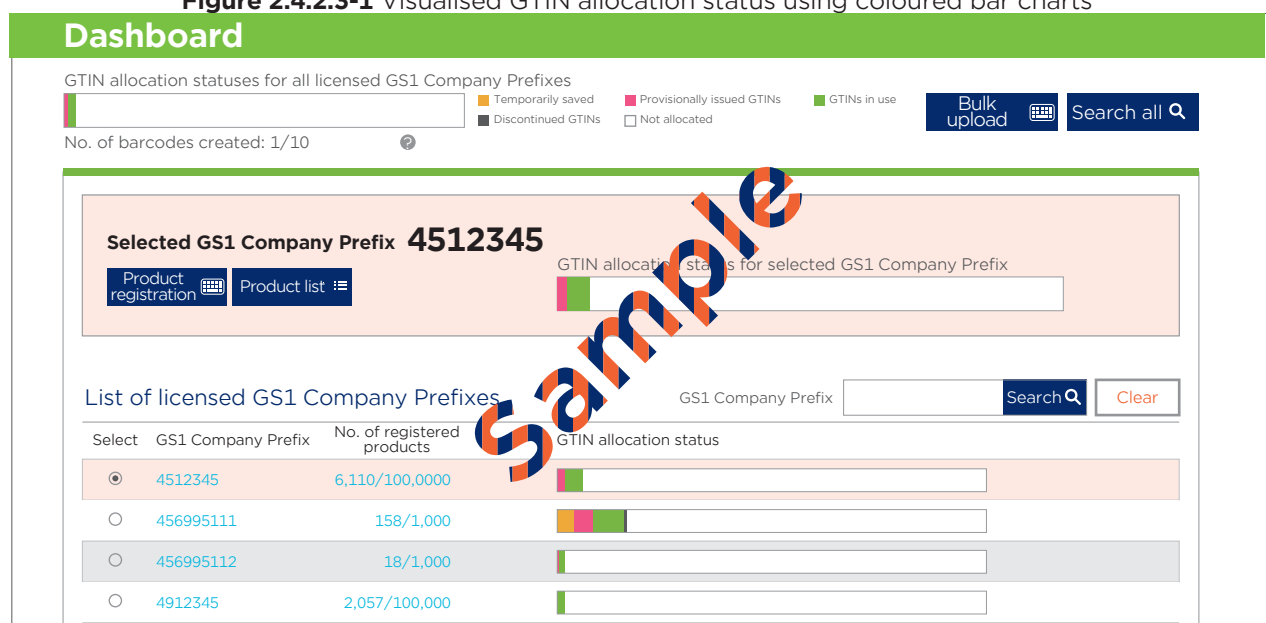
Currently, however, brand owners need to share product information in many different ways according to the relevant party's requested format, which can be a burden.

GJDB allows users to publish accurate product information globally as it has already been seamlessly integrated with the GS1 Registry Platform, JICFS/IFDB (2.6), GJDB × scan(2.5), GEPIR, and the Mulpi Database (2.10).

2.4.3 Number of items registered in GJDB

As of July 2021, about 1,500,000 items have been registered in GJDB by approximately 11,500 brand owners. During the service launch period, we asked companies with newly allocated GS1 Company Prefixes to register their product information, but we are now expanding this to customers that had already been licenced GS1 Company Prefixes before the launch. Therefore,

Figure 2.4.2.3-1 Visualised GTIN allocation status using coloured bar charts



the number of items and brand owners is expected to increase further.

Table 2.4.3-1 Item counts by category

Category	Item count
Food	43,562
Healthcare supplies	9,427
General merchandise, household items, and durable consumer goods	184,862
Cultural goods	1,177,555
Apparel and personal items	133,715
Other	11,103
Total	1,560,224

2.4.4 GJDB update history information

Since the release of GJDB in October 2019, we have made several updates to make product information registration easier and improve usability.

We will continue to update GJDB in order to incorporate features that meet the requirements of local users and the direction of the GS1 data services.

Table 2.4.4-1 below shows the update history for GJDB.

2.4.5 Future of GJDB

We aim to widen the product information coverage for GJDB by seeking the cooperation of product information databases in related industries and then gradually strengthen its features to facilitate the resolution of various issues associated with domestic product information exchanges.

Through these efforts, it is our sincere desire that GJDB will be a service that is the benefit of not only brand owners but also wholesalers and retailers who utilise product information in GJDB.

Table 2.4.4-1 GJDB update history

Date	Contents
Jun 2020 (Q1)	<ul style="list-style-type: none"> • Functions enhanced for those who register product information Bulk upload/download, bulk update, and assistance for classification selection • New function released for those who browse product information Product information search and browse functions
Dec 2020 (Q3)	<ul style="list-style-type: none"> • Function enhanced for those who register product information Barcode symbol form patterns added • Support for migration of JICFS/IFDB data to GJDB
May 2021 (Q1)	<ul style="list-style-type: none"> • Launch of daily uploads of GTIN data to GRP

2.5 GJDB × scan

2.5.1 Overview

In January 2021, we launched a smartphone app called 'GJDB × scan', which allows users to display product information by scanning the barcode on the product package. It can be downloaded for free on iOS or Android devices.

GJDB × scan displays product information registered in GJDB (refer to 2.4) when a user scans the EAN symbol on the product package. It also confirms whether the GTIN is based on a valid GS1 Company Prefix that is licensed by GS1 Japan.

Users can also use this app to send feedback on the displayed product information and request

the registration of product information.

These inputs are shared with the brand owners.

2.5.2 Features

GJDB × scan shows different results, depending on whether the GTIN is registered in GJDB or not as follows.

(i) GTINs that are registered in GJDB

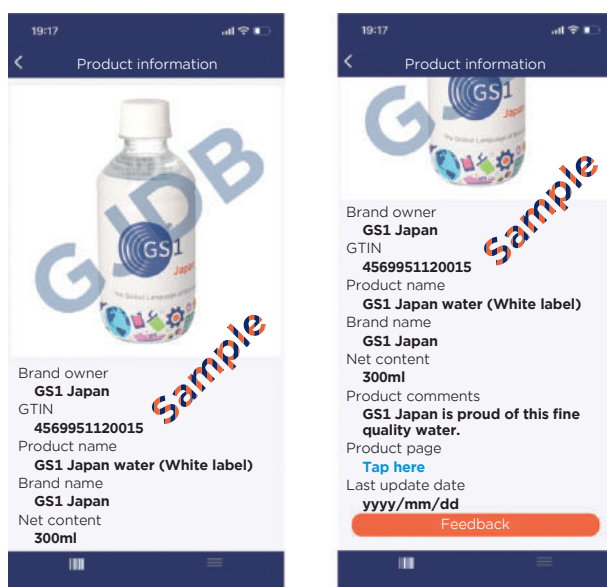
If the GTIN is registered in GJDB, the app displays the product information shown below.

- Brand owner
- GTIN

- Product name
- Brand name
- Net content
- Product comments
- Last update date
- Product image
- Product website

The product information includes useful information such as a link to the product page on the brand owner's website, so users can access additional information that is not provided on the product packaging.

Figure 2.5-1 Product information (example)



This will prompt the brand owner to register the product information.

In addition, if a user finds that the registered product information is incorrect, they can send a message to the brand owner via the app so that the brand owner can correct their product information.

(ii) GTINs that are not registered in GJDB

If the GTIN is not registered in GJDB, the app displays only the GTIN and the brand owner's name.

In this case, just tap the **Request product registration** button to send a request to the brand owner.

Figure 2.5-2 Sending feedback

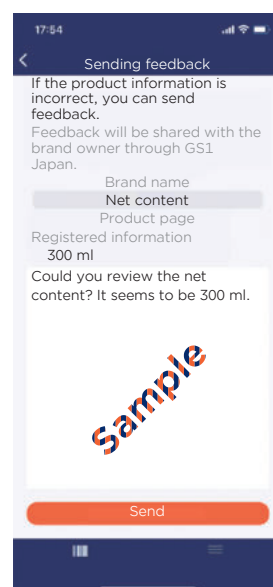


Figure 2.5-3 Requesting product information registration



2.6 JICFS/IFDB (JAN Item Code File Service/Integrated Flexible Data Base)

Since 1988, GS1 Japan has been operating JICFS/IFDB, a product catalogue database, and has been collecting basic product attributes, such as GTIN, product names, product categories, weights, and quantities.

Product data are not only registered directly by product manufacturers, but also are collected from product information databases of various industries including alcoholic beverages and processed foods, household goods and cosmetics, consumer electronics, and OTC drugs.

Data is even collected from distributors. These

data are then entered into the database after manually conducted maintenance according to the JICFS/IFDB standard and are made available to retailers, wholesalers, and other users via JICFS Database Providers (JDPs) (Figure 2.6-1).

Table 2.6-1 shows the number of the products registered in JICFS/IFDB.

Approximately 20,000 new products are registered in the database every month.

Most of the data registered in JICFS/IFDB were related to food or commodities, but in recent

years the amount of data on products such as stationery, toys, and durable consumer goods has been increasing, because there is growing market demand for GS1 barcodes marks on such products so that they can be identified with GTINs.

Similarly, more variations are seen in case studies on the use of product data in JICFS/IFDB.

In the past, these data were mostly used in the business-to-business field (B2B). In other words, to support retailers in creating master data to introduce a point-of-sale (POS) system or an electronic ordering system (EOS), to suggest shelf allocations, and to analyse POS data.

Recently, however, usage in the business-to-consumer field (B2C) is growing according to the increase of online shopping sites and consumer apps for Consumer Panel Survey.

Since many stores in online shopping malls register product information using their own codes and product names, products are sometimes repeatedly registered under different names and categories.

To solve this problem, several companies operating online shopping malls use GTIN for product information control.

Data collection applications for Consumer Panel

Figure 2.6-1 JICFS/IFDB system flow

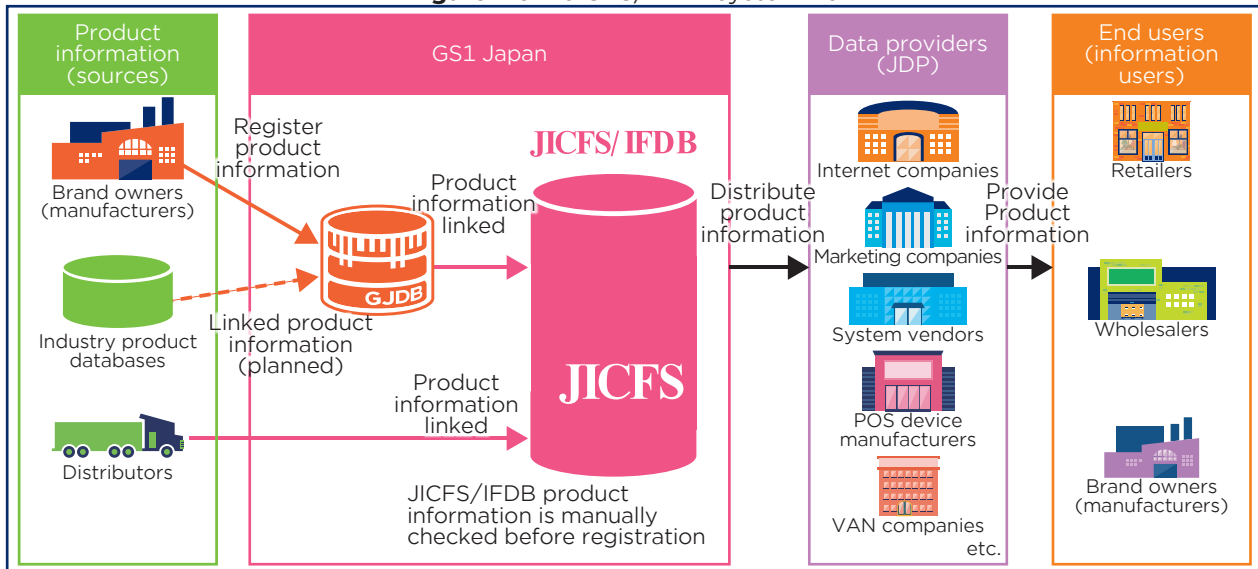


Table 2.6-1 Number of Registered Products

	2015	2016	2017	2018	2019	2020	2021
Food	1,371,489	1,465,218	1,544,912	1,628,262	1,688,487	1,766,776	1,842,309
Commodity	759,793	807,882	855,876	897,873	937,338	976,486	1,032,509
Recreation and miscellaneous	492,503	532,678	575,471	616,509	653,634	695,942	738,773
Durable goods	281,236	311,321	337,560	406,105	459,415	485,633	515,591
Apparel, personal items & sporting goods	270,240	301,951	331,360	367,305	397,709	430,390	480,251
Others	3,230	3,172	3,147	3,123	3,111	3,092	3,080
Active item total	2,969,346	3,422,222	3,648,326	3,919,177	4,139,694	4,358,319	4,612,513
Inactive data	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154	3,104,154
Grand total	6,282,645	6,526,376	6,752,480	7,023,331	7,243,848	7,462,473	7,716,667
Increase in number of items (year-on-year)	209,145	243,731	226,104	270,851	220,517	218,625	254,194
Rate of increase (year-on-year)	103.44%	103.88%	103.46%	104.01%	103.14%	103.02%	103.40%

Table 2.6-2 JICFS Classification Code System <Example: 110109: Salt>

Food	Processed Food	Seasonings	Table Salt
(Broad category)	(Main category)	(Sub-category)	(Sub-sub-category)
1	1	01	09

Survey use product information from JICFS/IFDB as data which assists users (consumers) in inputting merchandise information that they purchased into the application.

The product information in JICFS/IFDB includes the JICFS Classification Code System (Table 2.6-2), which indicates product categories.

These codes are used as search keys for extracting the necessary product groups, and as aggregate keys for grouping similar products together for data analysis.

The JICFS-classification is revised as necessary.

2.7 GEPIR

GEPIR (Global Electronic Party Information Registry) is a unique, internet-based service that gives access to basic contact information on GS1 Company Prefix licensees. Since 2003, GS1 Japan has been providing GEPIR services in Japanese and English on the GS1 Japan website.

In 2007, a GLN location search function was added to GEPIR by GS1 Japan, followed by GTIN information display services in 2013. In March

2017, an upgrade to GEPIR version 4.0 was completed.

With GEPIR version 4.0, basic information on GS1 member companies can be searched by party name, GTIN, GLN, and other GS1 identification keys.

Currently, GEPIR is used by many companies, and is accessed more than two million times annually.

Figure 2.7-1 Example of GS1 Japan search results

The screenshot displays the GEPIR search interface. On the left, there are search methods: GTIN, GLN, Other GS1 Keys, and Party Name. A 'Search by Barcode (GTIN)' section is active, showing a search for '4569951116179'. Below this, there are radio buttons for 'Trade Item Ownership' and 'Trade Item Info'. A 'Search' button is at the bottom of the search panel.

The search results section shows 'Number of Hits: 1'. The 'Company Information' table is as follows:

No.	Entity GLN	Company Information	Contact Information	GS1 Company Prefix	GLN Information
1	456995111009	一般財団法人流通システム開発センター GS1 Japan 〒107-0062 東京都港区南青山1-1-1 新青山ビル東館9F JP	http://www.dsri.jp/	4512345 456995111 456995112 4912345 4987000 499687	GLN List

Information Provider: GS1 Japan(4569951110009)

2.8 GPC Translation and OECD product recall portal

Global Product Classification (GPC) is a product classification developed and managed by GS1. GPC is a required attribute when registering product information into the data pools of the Global Data Synchronisation Network (GDSN). As of November 2020, the development of 40 broad categories, including Food/Beverage/Tobacco, Kitchenware and Tableware, Beauty/Personal Care/Hygiene, and Pet Care/Food, have been completed and released on the GS1 website <<https://www.gs1.org/standards/gpc>>.

Localisation has been progressing, with translations into 25 languages including Japanese available on the GS1 website.

Recently, there have been increasing demand to use GPC for other purposes than GDSN. The recall portal website managed by OECD has adopted GPC for its product categorisation.

The aim of this portal site is to facilitate the efficient sharing of international product safety information in multiple languages, as a response to current trends in global trading. The portal site

started operation in October 2012 in English and French, with the participation of the U.S., Australia, Canada, and countries in the EU. Japan also joined in January 2015, providing product recall information on Japanese products, as well

as adding a link to the Japanese-language version on the home page of the site.

We expect the more recall-related information is supplied by OECD members to this site, the more GPC utilisation will expand.

Figure 2.8-1 The Global Recalls portal showing Japanese products subject to recall

Date	Picture	Product name	Jurisdiction of recall	Economy where made	Language	Authorities link
2021-06-15		(Toy) Car & Truck Set	Japan		English	Link
2021-06-07		Toddler sawing Fisher-Price 2-in-1 Soothe'n Play Glider	Japan		English	Link
2021-05-18		Passenger car : Mazda : CX-30	Portugal	Japan	English	Link
2021-05-18		HEROISK or TALRIKA plate, bowl, and mug	Japan		English	Link
2021-05-14		FIXA/FIXA Laser Level	Japan		English	Link
2021-04-15		Simond Climbing Rope	Japan		English	Link
2021-03-29		Passenger car : Toyota : Auris, Avenis, RAV4, Verso	Portugal	Japan	English	Link
2021-03-07		Fireworks : Aalborg Fyrværkerifabrik A/S : Japan Kanda	Denmark	China (People's Republic of)	English	Link

2.9 Ryutsu BMS (Business Message Standards)

The use of EDI in Japan’s retail sector started with the adoption of the Electronic Ordering System (EOS) using the **JCA Protocol**, a standard dSince the 1990s, EDI has also been adopted for business processes other than ordering.

Furthermore, **Ryutsu** Business Message Standards (Ryutsu BMS) were established in the 2000s based on Efficient Consumer Response (ECR) and Quick Response (QR) procedures with the aim of improving information sharing between retailers and suppliers.

✓ **JCA Protocol:** The standard communications protocol for electronic ordering, this was established in 1980 by the Japan Chain Stores Association (JCA). The communication circuits available for this protocol are public circuits (2,400 bps) and DDX circuits (9,600 bps). It cannot transmit kanji characters and images. DDX circuits are packet-type communication services that use telephone lines.

✓ **Ryutsu:** This Japanese word refers to the entire supply and demand chain, which

typically consists of three groups in the form of manufacturers, wholesalers, and retailers.

2.9.1 Development of Ryutsu BMS

Drawn up in 1980, the JCA Protocol became widespread as an EOS for retail businesses.

In the 1990s, the business procedures covered by EDI expanded from EOS to the shipping and receipt of goods, invoicing, and payments. However, from the late 1990s to the early 2000s, the system was found to have the following problems.

- Low speed
- Inability to deal with kanji characters and images
- Discontinuation of necessary communication equipment
- Difficulty in adding new data fields due to fixed length data format
- Differences in message formats from one retailer to the next

Concerned about this situation, two Japanese supermarket organisations agreed to cooperate and started developing a next-generation EDI in June 2005. With the support of the Ministry of Economy, Trade and Industry (METI), Ryutsu BMS was created as the new EDI standard in April 2007. Ryutsu BMS is now being increasingly adopted throughout the Japanese retail industry.

2.9.2 Outline of Ryutsu BMS

Ryutsu BMS defines the following.

(i) Communication infrastructure

There are three standard communication protocols for exchanging Ryutsu BMS messages.

- Server-to-Server Protocols: ebMS and AS2
- Client-to-Server Protocol: **JX Protocol**

In addition, guidelines for secure internet communications have been prepared, and the use of a certificate authority that meets the requirements of the guidelines is recommended.

- ✓ **JX Protocol:** A communications protocol for transmitting messages from a client terminal to a corresponding server on a TCP/IP

network. Using the international SOAP-RPC standard, the protocol delivers functions that are equivalent to those of the J Protocol. The JX Protocol has become the standard communications protocol for exchanging EDI messages between clients and servers within Ryutsu BMS.

(ii) Standard messages

There are two types of messages.

- Basic messages

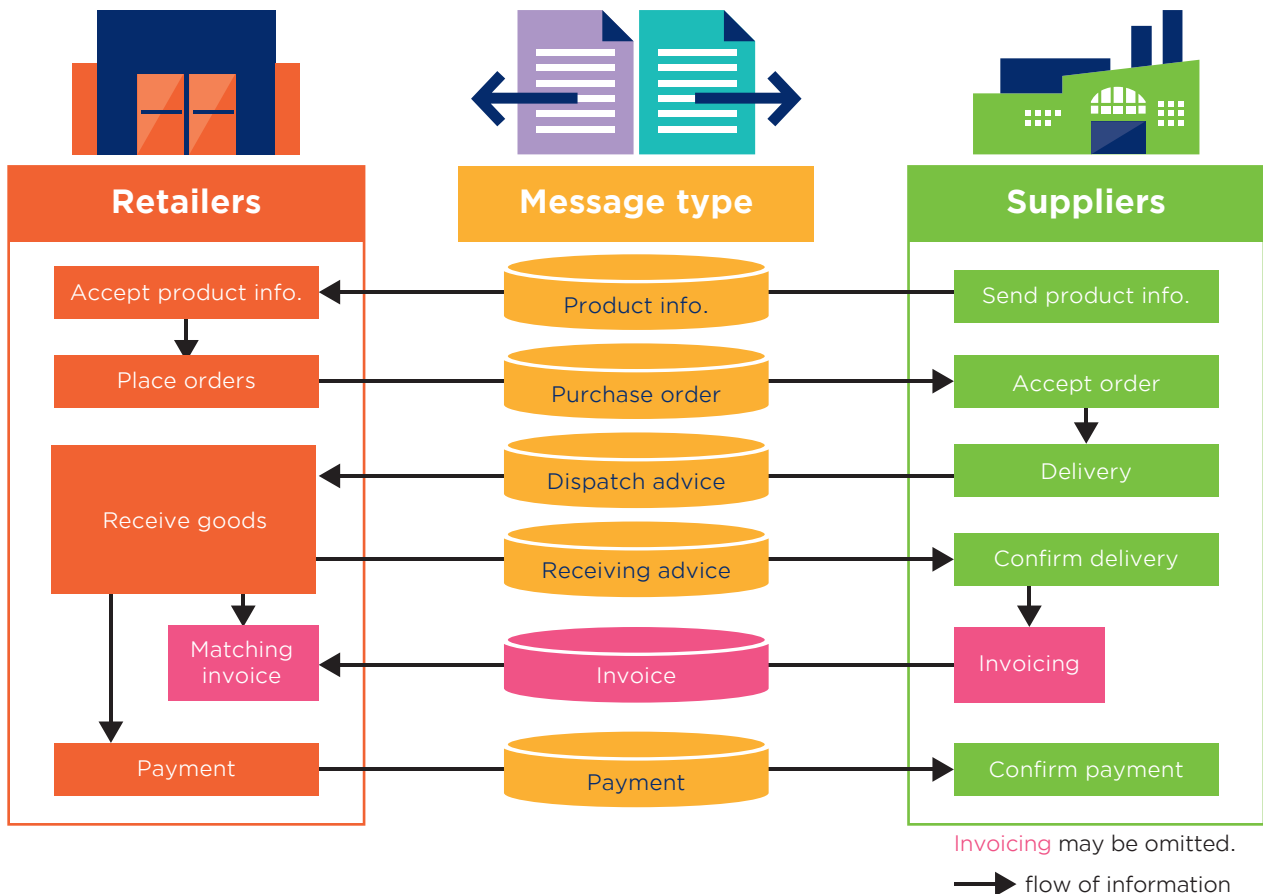
Intended for use at supermarkets, chain drug stores, and the like, 28 basic messages were published based on the Order to Cash business model.

- Department store messages

Japanese department stores have unique transaction models that differ from those used by other retailers.

For example, they register a merchandise purchase when the merchandise has actually been sold and they need to manage the pre-ordering of seasonal gifts for the Japanese custom of giving gifts twice a year (in the

Figure 2.9.2-1 Typical turnaround business processes and Ryutsu BMS messages between retailers and suppliers



summer and at the year's end).

Therefore, department stores use 27 unique messages in their transactions.

2.9.3 Efforts to promote Ryutsu BMS

GS1 Japan, together with the Supply Chain Standards Management and Promotion Council (see 3.2), has been taking various efforts to encourage the wider use of Ryutsu BMS.

- Trainings and seminars:

GS1 Japan offers a wide range of training courses, from introductory courses to advanced implementation courses. Some of

these courses are available as e-learning. We also hold seminars to introduce best practices to Ryutsu BMS users and solution providers.

- Promotional materials:

Flyers, brochures, and videos have been made available to anyone interested in Ryutsu BMS. We also operate a dedicated Ryutsu BMS website that is constantly kept up to date.

2.9.4 User commitments to Ryutsu BMS

By 2020, about 600 retailers and 15,200 wholesalers and manufacturers had already adopted Ryutsu BMS.

2.10 Multilingual product information service

As the secretariat of the **Collaborative Council of Manufacturers, Wholesalers, and Retailers**, GS1 Japan has been working on a project aimed at creating a multilingual product information service for foreign visitors to Japan.

✔ **Collaborative Council of Manufacturers, Wholesalers, and Retailers:** Established in collaboration with various manufacturers, wholesalers, and retailers of consumer goods, this council aims to foster significant innovation and improvements to supply chain management while also enhancing the industry's competitiveness in order to help better people's lives. As of June 2021, the council membership is made up of representatives from 22 manufacturers, 9 wholesalers, and 22 retailers. (For further details, refer to 3.5.)

2.10.1 Background and objectives

Due to the COVID-19 pandemic, the number of foreign visitors to Japan has fallen dramatically in 2020 and 2021. Prior to the pandemic, however, the number of foreign visitors to Japan exceeded 30 million and the government remains committed to meeting its goal of increasing this number to 60 million by 2030. Nonetheless, there are apparently an increasing number of foreign visitors who feel dissatisfied or anxious when they shop in Japan since many products do not provide any information in languages other than Japanese.

To address this situation, the council launched a pilot in 2016 to establish a system capable of providing foreign visitors with accurate product

information from the brand owners in various languages (e.g., English, simplified Chinese, traditional Chinese, and Korean) via a smartphone app. We launched this multilingual product information service in 2018.

2.10.2 Service overview

When a foreign visitor uses this service to scan the EAN/UPC symbol on a product via the smartphone app, information on the product (including its GTIN) is displayed on the screen in one of the multiple languages offered in accordance with the language configuration of the phone. GS1 Japan manages the multilingual product information data pool (DP) and the smartphone app, which is called Mulpi (Multi-language product information).

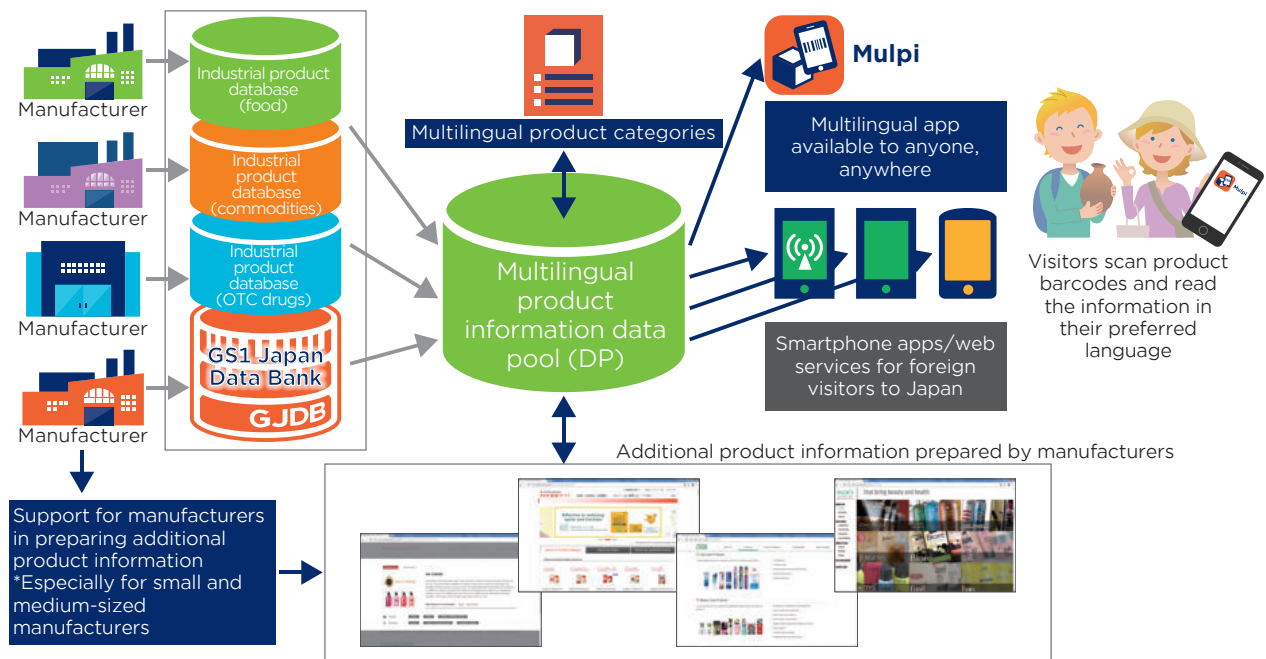
The user experience of this multilingual product information service is as follows.

1. When the user scans a product's barcode using Mulpi, the basic product information (GTIN, **product name**, and an image) and **category name** are displayed on the screen in the selected language.

If the brand owners have created a product website, Mulpi automatically displays it.

- ✔ **Product name:** Product names are given in Japanese.
- ✔ **Category name:** Category names are classified according to the JAN Item Code File Service (JICFS; refer to 2.6 'JICFS/IFDB').

Figure 2.10.2-1 Overview of the multilingual product information service



- As a communication infrastructure for the provision of accurate product information by brand owners, the multilingual product information DP will be made available for other apps provided by related service providers.

We provide participating companies with support in creating multilingual product information webpages in cooperation with translation agencies.

2.10.3 Future plans

As part of efforts to help improve the shopping experience of foreign visitors to Japan during the 2020 Tokyo Olympics and Paralympics, GS1 Japan had planned to increase the number of

products registered for the service and promote greater use of the app.

Unfortunately, however, the number of participating companies and users has not increased as expected. Furthermore, the outbreak of the COVID-19 pandemic has prevented us from increasing the number of foreign users.

Due to the current situation, we have regrettably had to halt operation of the data pool (multilingual product information DP) and Mulpi in 2021.

Despite this, we will continue to collect and use product information through the GS1 Japan Data Bank.

3. Community engagement and standards implementation

3.1 GS1 Japan Partners

In April 2015, GS1 Japan launched GS1 Japan Partners, a program mainly for solution providers. This program is aimed at sharing information on the latest systematisation trends and case studies while also utilising GS1 standards to promote the systematisation of information and greater efficiency in the overall distribution industry.

In FY2021, the program had 122 members, including many of Japan's leading solution providers (Table 3.1-1).

Table 3.1-1 Membership structure
(as of March 2021)

Sales [unit: JPY]		No. of members
Less than	1 billion yen	51
1 billion -	10 billion yen	28
10 billion -	1 trillion yen	40
1 trillion yen and above		3
Total		122

Table 3.1-2 Events held in FY2020

Date	Events	Topics
Nov 2020	1st Special Seminar • Introduction to the 'Barcode Guidelines' and the 'GS1 AIDC Standards Conformity Check Guide'	<ul style="list-style-type: none"> • Introduction to the 'GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases' (refer to 2.1) • Introduction to the 'GS1 AIDC Standards Conformity Check Guide and GS1 AIDC Standards Self-Declaration of Conformity Service' (refer to 2.2)
Feb 2021	2nd Special Seminar	<ul style="list-style-type: none"> • EPC Technical Seminar (refer to 3.7.4)
Feb 2021	1st Regular Seminar • GS1's Challenges in Today's Digitalising Society	<ul style="list-style-type: none"> • GS1's Ambitions and the Way Ahead in Supporting Industry's Digital Transformation • GS1 Japan's New Data Service (GJDB) (refer to 2.4) • Current Status and Future Prospects of GTIN in Japan • Fundamentals of GS1 Standards • Trends in the Use of GS1 Standards in the Grocery Industry • Trends in the Use of GS1 Standards in the Healthcare Industry • Current Status and Future Prospects of EPC/RFID • Current Status and Future Prospects of Ryutsu BMS (Distribution Business Message Standards)
Mar 2021	2nd Regular Seminar	<ul style="list-style-type: none"> • Current Trends: Challenges for the Distribution and Logistics Industry in the COVID-19 Era • Research and Study: Future of On-Pack Coding - Moving Beyond EAN/U.P.C.

3.2 Supply Chain Standards Management and Promotion Council

The Supply Chain Standards Management and Promotion Council was founded in April 2009 by various industry groups and businesses to help

promote an efficient supply chain information system in Japan's retail sector.

The activities carried out by the council include

maintaining and promoting Ryutsu BMS (see 2.9), which was initially developed with the support of the Ministry of Economy, Trade and Industry. At present, GS1 Japan serves as the council's secretariat.

The council held its inaugural General Assembly in Tokyo in April 2009. The council's full members consist of trade associations for manufacturers, distributors, and retailers in the consumer goods industry. As of May 2021, the council is composed of 49 full member organisations. In 2021, the council is being operated under the following structure.

3.2.1 Organisational structure

(1) General Assembly

Once a year, the council holds its General Assembly to share and confirm its activity results for the previous fiscal year and approve its agenda for the new fiscal year. In addition, the officers of the council are appointed at the General Assembly to serve two-year terms.

(2) Executive Committee

The role of the Executive Committee includes making important decisions concerning the management of the council, such as admitting new members, establishing and discontinuing working groups, and appointing working group members. As of 2021, the committee is composed of representatives from 14 full member organisations.

(3) Working groups (task forces)

The council has the following three working groups (Figure 3.2.1-1).

(3-1) Message Maintenance Working Group

This group maintains and manages Ryutsu BMS messages, except for product master data, as well as various guidelines.

The group's work is conducted in response to requests from full members for changes or additions to the established standards.

The group examines such requests, decides on the steps to be taken, revises the relevant guidelines, and then publishes them as a new standard.

In 2018, this group released a revised version of the set of messages and guidelines corresponding to the newly introduced reduced consumption tax rate.

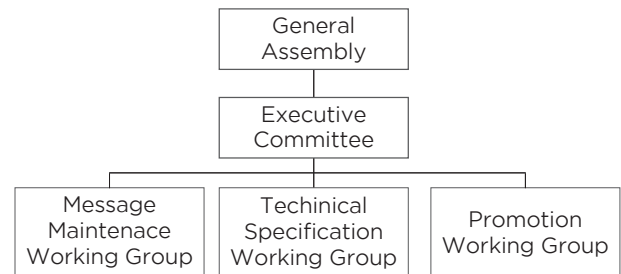
(3-2) Technical Specification Working Group

This group maintains and manages guidelines for the network technologies and information processing technologies that are used to exchange standard Ryutsu BMS messages via communications circuits.

(3-3) Promotion Working Group

This group examines and implements steps aimed at encouraging the more widespread adoption of Ryutsu BMS among SMEs. The group also monitors 'off the standard usage' of Ryutsu BMS.

Figure 3.2.1-1 Organisational structure of the council



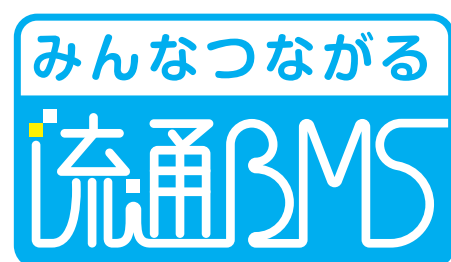
3.2.2 Activities for promoting and increasing the adoption of Ryutsu BMS

GS1 Japan and the council are working together to carry out various initiatives aimed at encouraging the more widespread adoption of Ryutsu BMS. For details, see 2.9.

3.2.3 Registration of the Ryutsu BMS trademark

GS1 Japan has registered the Ryutsu BMS logo for use with products and services that comply with Ryutsu BMS specifications. As of May 2021, 131 accredited products are permitted to use the logo.

Figure 3.2.3-1 Ryutsu BMS logo



3.3 GS1 Healthcare Japan

GS1 Healthcare Japan is a voluntary group that is made up of domestic medical institutions, pharmaceutical and medical device manufacturers, wholesalers, and solution providers.

The group works with GS1 Healthcare, the Ministry of Health, Labour and Welfare, and other organisations to promote standardisation with the aim of ensuring patient safety, maintaining traceability, and enhancing efficiency in distribution and medical management.

As of May 2021, GS1 Healthcare Japan has 113 members.

3.3.1 Activities

The members of GS1 Healthcare Japan are actively engaged in three groups: the International Standards and Regulations Study Work Group; the Medical Solutions Study Work Group; and the Planning and Public Relations Group.

3.3.2 Activities of work groups

- **International Standards and Regulations Study Work Group**

Research into trends in international regulations and standardisation.

- **Medical Solutions Study Work Group**

Promotion of GS1 standards as measures aimed at improving safety and supply chain efficiency

throughout the entire medical industry.

- **Planning and Public Relations Group**

Promotion of using GS1 standards to medical institutions.

3.3.3 Topics in 2020/21

GS1 Healthcare Japan holds its annual conference every spring to share case studies of GS1 barcode usage at medical institutions and the latest regulatory information.

Unfortunately, last year's conference had to be cancelled due to the spread of COVID-19, but this year's conference was held through a combination of online and face-to-face events.

In previous years, our conferences have been attended by around 250 people, but holding this year's conference through both online and face-to-face events enabled us to attract 650 attendees on the day itself, and this number rose to more than 1,000 when those who watched the recording at a later date are included. The conference was generally very well received by those who attended.

We remain committed to actively sharing information related to the utilisation of GS1 standards, taking into account the fact that barcode labelling for medical products will become a legal requirement in December 2022 due to a revision to Japanese law.

3.4 ICT-Oriented Wholesale Industry Study Group

With GS1 Japan acting as its secretariat, the ICT-Oriented Wholesale Industry Study Group was established in 1985 in accordance with instructions issued by the Ministry of Economy, Trade and Industry (METI).

The purpose of this group is to promote the rationalisation of the wholesale industry. To this end, member wholesale companies take the lead in studying common issues every year.

Wholesalers play a major role in Japan's supply chain system since most manufactured products are delivered to retailers through wholesalers.

This study group is operated primarily by wholesalers dealing in fast-moving consumer goods (FMCG) in a variety of different industries

(foods, household products, etc.). It has 47 members as of June 2021. The group is further divided into several sub-working groups according to themes related to the interests of its members, with each sub-working group holding monthly meetings.

In line with its mission of pursuing the 'total optimisation of Japanese distribution', the study group worked on the following five topics in FY2020. Since this year, all meetings have been held online due to COVID-19.

1. Improving productivity, logistics efficiency, and the working environment
2. Promoting Ryutsu BMS (refer to 2.9)

3. Promoting collaboration among wholesalers
4. Examining the DX of the wholesale industry in the era of digital technology
5. Considering the future direction for wholesalers

3.5 Collaborative Council of Manufacturers, Wholesalers, and Retailers

The Collaborative Council of Manufacturers, Wholesalers, and Retailers was formally established in May 2011 with the aim of improving global competitiveness and contributing to a more prosperous lifestyle through the pursuit of extensive innovations and improvements to supply chain management in the consumer product industry.

Companies are entitled to participate in the council if their executive management endorses and supports the council's vision and they agree to act in accordance with this vision.

GS1 Japan and the Distribution Economics Institute of Japan jointly serve as the council's secretariat. In May 2010, the joint secretariat began holding preparatory meetings for the establishment of the council with 15 founding member companies. They discussed the adoption of the council's vision and how the full-scale activities of the council should be managed with the active support of the Ministry of Economy, Trade and Industry (METI). In May 2011, the founding companies announced the formal establishment of the council at the 'Collaborative Forum of Manufacturers, Wholesalers, and Retailers'.

The council employs a four-tier structure that consists of the following: general meetings,

strategic meetings, steering committee meetings, and working group meetings. The outcomes of the activities conducted by the working groups are reported at the annual general meeting.

We have established and run practical working groups every year since 2011.

One of these groups is tasked with pursuing logistics optimisation, with a focus on reducing returns and optimising the delivery of processed food, daily necessities, and OTC medicines. Other groups are involved in promoting information sharing among manufacturers, wholesalers, and retailers.

Due to the COVID-19 pandemic, the 2020 general meeting was held online in July.

At the 2020 general meeting, the following working groups reported on the activities that they carried out that year: the Working Group for Logistics Optimisation; the Study Group for Promotion of Smart Logistics Construction; the Multilingual Product Information Project (refer to 2.10); and the Retail Technology Study Group.

The results of the fourth Supply Chain Innovation Award were also announced, with case studies being shared by the winners of the Grand Prize, the Prize for Excellence, and the Special Prize for Food Loss Reduction.

3.6 Study Group for Information Systems in Food, Beverage, and Alcohol Industry

It is important for food producers to cooperate with wholesalers, as they are positioned between retailers and the product manufacturers.

This voluntary study group for liquor and processed food businesses was established in 1983 with the aim of conducting studies to identify the most appropriate information systems for use between food producers and wholesalers.

The study group consists of about 60 Japanese leading companies in the processed food, marine

Figure 3.6-1 Regular meeting



product, and liquor industries. GS1 Japan serves as the group's secretariat.

The study group conducts joint studies on new issues concerning the standardisation of B2B data exchanges among companies in the supply

chain. It holds regular quarterly meetings to introduce best practices for the pursuit of information systemisation by its members. It also organises seminars where outside lecturers are invited to discuss the latest topics and conducts study tours of pioneering businesses.

3.7 User support

So that users can better understand GS1 standards, GS1 Japan offers both various seminar-style courses and distance e-learning courses.

Due to the explosive spread of COVID-19, this year's courses are being mainly held online and are attracting participants from all over Japan. The following are being offered as scheduled courses:

1. Introduction to Barcodes
2. Introduction to EPC/RFID
3. Introduction and Implementation of Ryutsu BMS
4. Introduction to Barcodes for Prescription Drugs and Medical Devices

3.7.1 Introduction to Barcodes

This scheduled program offers basic knowledge on GS1 barcodes, in order to accelerate GTIN usage and application.

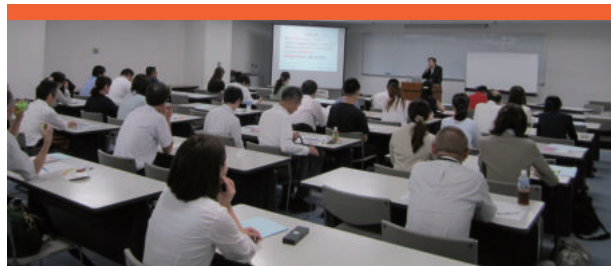
The seminar locations are in Tokyo and Osaka, and the participants are mostly new members who want to learn about barcodes from the basic and to know how to display barcode to products. It is expected that they will obtain general knowledge about barcodes. On-site training is also available accordingly upon request at an applicant's specified place and time.

In addition to the seminar courses above, an e-learning program was introduced in 2016 enabling users to learn wherever and whenever they choose.

This year, due to COVID-19, we reviewed our course delivery methods, updated the content of the e-learning course, and reviewed the structure, textbook, and the delivery method of the online introductory barcode course before holding it.

We had held several online courses by September, and every time after the courses the staff gather together to improve the courses further.

Figure 3.7.1-1 Introduction to Barcodes Seminar (before Covid-19)



3.7.2 Introduction to EPC/RFID

This program is intended give EPC/RFID beginners a deeper understanding of approaches to utilising EPC/RFID. The seminar locations are Tokyo and Osaka, and participants are expected to learn about the characteristics of RFID, successful implementation case studies for EPC/RFID systems, GS1 EPC/RFID standards, and other related information. After the lectures, a demonstration is carried out simulating shipping and the checking of received items by reading RFID batches. Participants can also get hands-on experience of doing such tasks.

Due to COVID-19, this seminar is now held as a webinar.

E-learning called 'Guide to EPCIS System Construction' is also available, which is helpful for constructing EPCIS systems.

3.7.3 Introduction and Implementation of Ryutsu BMS

The program 'Introduction of Ryutsu BMS' explains EDI from the basics through to an outline of Ryutsu BMS, the results of implementation, and more.

This program is intended for persons related to CPG supply chains, especially persons newly assigned to information system departments or who are considering introducing Ryutsu BMS.

In addition, it is also useful for solution providers or consultants when supporting user companies.

The main seminar locations are Tokyo and Osaka, and an e-learning version of the program was launched in May 2017.

Seminar-style courses were held in Tokyo and Osaka, but due to COVID-19, the courses are currently not being held.

Since May 2017, we have been offering an e-learning course called 'Introduction of Ryutsu BMS'. Participants can learn the basics of Ryutsu BMS online.

As the next step after Introduction to Ryutsu BMS, another e-learning course called 'Ryutsu BMS Implementation Course' is also offered. This course explains the key points in effectively introducing Ryutsu BMS while complying with the standard specifications.

3.7.4 EPC Technical Seminar

We held the first webinar-style EPC Technical Seminar on 16 February 2021. This 90-minute seminar was aimed at helping participants gain a first-hand understanding of the encoding and decoding procedures for EPC schemes based on the EPC Tag Data Standard. The participants were expected to be technical engineers working for RFID solution providers. Held as a service provided under the GS1 Japan Partners Program (see 3.1 GS1 Japan Partners), the seminar was attended by 29 of the program's participants.

We started by reviewing the basics of GS1 identification keys and then described the structure of EPCs. In our explanation, we used the SGTIN EPC scheme (GTIN + serial number) as an example. We described each of its encoding and decoding procedures one-by-one with reference to the corresponding chapters in the

EPC Tag Data Standard. In the later part of the seminar, we conducted a kind of hands-on lecture to allow the participants to practice the encoding and decoding of EPC schemes by making manual calculations. As part of this hands-on experience, we introduced not only the SGTIN scheme but also the SSCC EPC scheme to demonstrate that the same encoding and decoding methodology can be applied for any EPC scheme. At the end of the seminar, we gave a brief introduction to GS1 tools and described recent activities related to EPC/RFID.

3.7.5 Introduction to Barcodes for Prescription Drugs and Medical Devices

This program provides practical knowledge about the guidelines released by the Ministry of Health, Labour and Welfare (MHLW), which specifies barcode marking rules for prescription drugs and medical devices. This program is designed for people working at drug or medical device manufacturers, wholesalers, medical service providers and related solution providers. Due to COVID-19, the classroom is now held as a webinar.

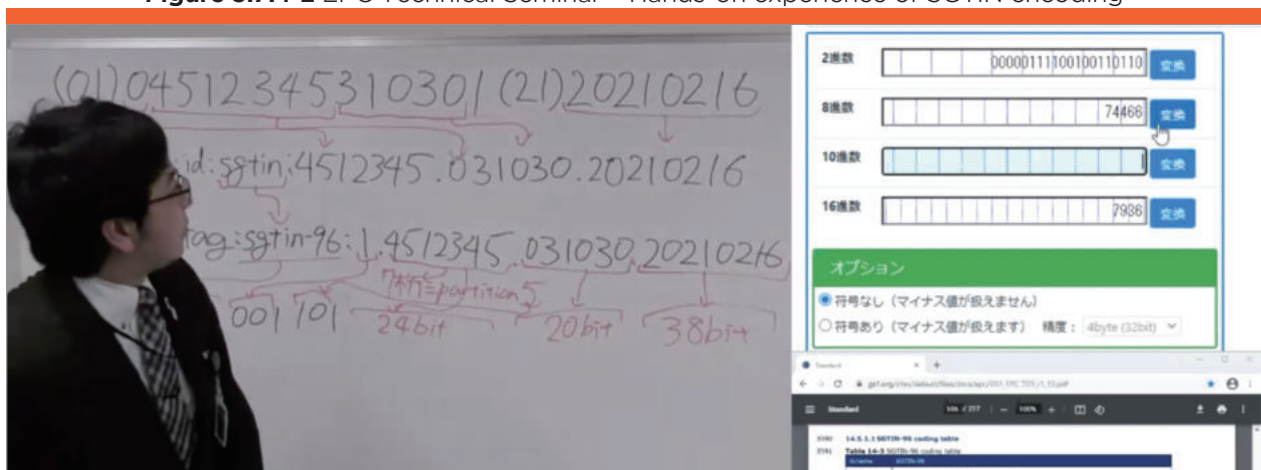
3.7.6 Junior job shadowing

GS1 Japan has welcomed study visits from middle and high school students on several occasions.

These study visits form part of an educational program that is operated with the School Support Centre, a specified non-profit organisation, acting as an intermediary.

This program gives students a chance to tour public institutions, government offices and

Figure 3.7.4-1 EPC Technical Seminar – Hands-on experience of SGTIN encoding



private companies in Tokyo when they visit the city from other regions on school excursions, thereby helping them learn about the specific operations of an organisation and its role in society.

On 12 November 2020, five students from Shochi Fukaya High School, which is located in Saitama Prefecture, visited the GS1 Japan office for a study visit.

We explained our services to the students and gave them an opportunity to scan GS1 barcodes and read the data carriers.

The student responses have generally been positive, with some making comments such as the following: 'I was able to gain a better

understanding of the purpose of barcodes', and 'I felt a bit more familiar with barcodes'.

Figure 3.7.6-1 Welcome to GS1 Japan



3.8 Publications and PR tools to promote GS1 standards

3.8.1 Guidelines

GS1 Japan has been providing materials about the GS1 standards to retailers, wholesalers, products manufacturers, and solution providers.

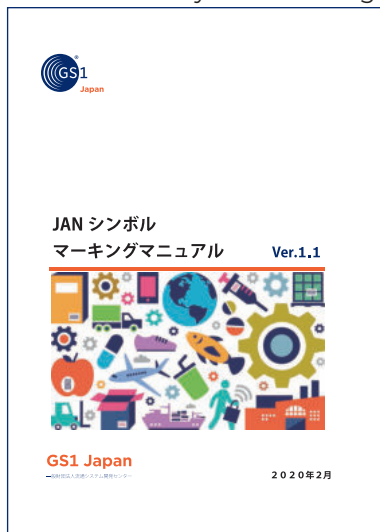
This information is published in order to promote the GS1 standards, and most of the materials are also available on our website.

The following are examples of our current publications:

3.8.1.1 JAN symbol marking manual

This manual explains the technical basics of EAN (called 'JAN' in Japan) symbols, such as their structure, size, and colour, as well as some examples of practical symbol creation to avoid

Figure 3.8.1.1-1 JAN symbol marking manual



the creation of incorrect symbols which take a long time to or are difficult to read. The manual is intended not only for brand owners who are responsible for displaying EAN symbols, but also for companies providing equipment and services related to printing, acquiring and verifying symbols.

3.8.1.2 Barcode guidelines for UDI

With regard to barcode labelling of medical devices, there are subtle differences between the GS1 standards and the rules of each country, including Japan. As barcodes are increasingly used for the import and export of products, it is important for brand owners to correctly understand the regulations and industry rules of

Figure 3.8.1.2-1 Barcode guidelines for UDI



each country in addition to the international GS1 standards. This guide provides basic information about the GS1 standards as well as points to note when distributing healthcare products in Japanese markets. Furthermore, it provides fundamental information to exporters about FDA UDI regulations in the US.

3.8.1.3 GS1 QR code/GS1-128 barcode guidelines for carton cases

These guidelines outline the rules and provides useful information for utilising GS1 QR codes or other GS1 standard barcodes to encode GTIN, date information (production, best-before and expiry date) and lot numbers on carton cases.

It has been developed to enable the efficient management of date information for packaged consumer goods, including processed foods requiring strict FIFO inventory control.

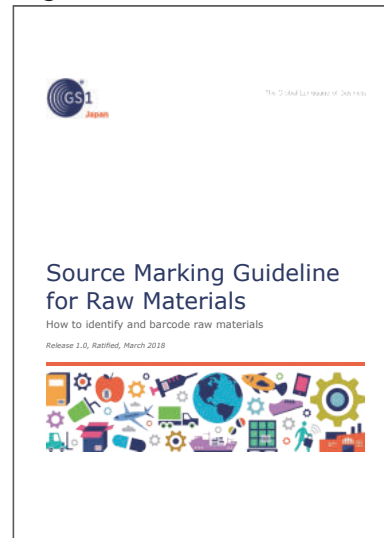
Figure 3.8.1.3-1 GS1 QR code/GS1-128 barcode guidelines for carton cases



3.8.1.4 Source marking guideline for raw materials

These guidelines define standard data items such as GTIN, lot number and date information (e.g. expiry date) to be displayed, as well as recommended barcodes for raw materials. We hope that these guidelines will encourage the use of barcodes with globally unique identification (i.e., without any duplicates) anywhere in the world, helping make supply chains more efficient and improve food safety and security.

Figure 3.8.1.4-1 Source marking guideline for raw materials



3.8.1.5 GS1 AIDC standards conformity check guide

This guide provides fundamental information about GS1 standards and checklists for verifying if barcode-related products conform with the GS1 standards for generating, printing, and reading barcodes.

The guide can be used for confirming the functions of various products and as reference material for GS1 standards.

Figure 3.8.1.5-1 GS1 AIDC standards conformity check guide



3.8.2 Periodical Publications

We also issue two periodical publications: GS1 Japan News and GS1 Japan Review.

GS1 Japan News is issued every two months and

provides the latest information about GS1 standards, events and trends in industry standardisation.

GS1 Japan Review is issued twice a year and provides more detailed information, including case studies, in addition to the above.

These publications were redesigned to match the GS1 Brand Manual from this fiscal year onwards.

Figure 3.8.2-1 GS1 Japan Review

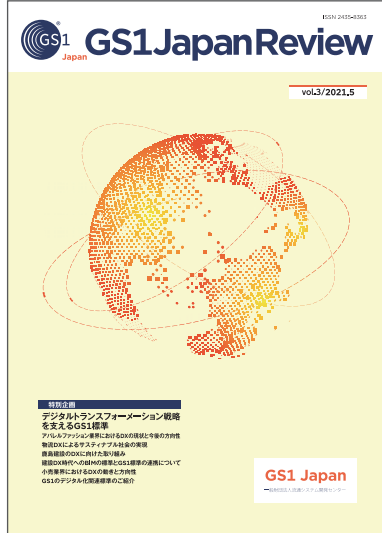


Figure 3.8.2-2 GS1 Japan News



3.8.3 Videos and GS1 Japan Scan mobile app

Moreover, GS1 Japan creates educational videos about GS1 standards, including EAN and ITF symbols, GTIN, EPC/RFID, GS1 Healthcare, and Ryutsu BMS.

Besides the above videos, we also have created many other informative educational videos that are mostly used during seminar programs.

All the videos are available both on our website and the GS1 Japan YouTube channel.

[<https://www.youtube.com/channel/UCWaw3zjmuvjytr0x4kLK1hw>]

Figure 3.8.3-1 QR code for the video URL



In addition to the above, in 2018 GS1 Japan has developed a mobile app called 'GS1 Japan Scan' to promote the utilisation of the GS1 standards.

This app allows users to easily check their products' barcodes to provisionally find if they meet GS1 standards and the Japanese industry rules for medical devices, pharmaceuticals, or food raw materials.

Figure 3.8.3-2 GS1 Japan Scan



3.9 Event

GS1 Japan organises and sponsors various events. Key events are introduced below.

3.9.1 GS1 Japan Annual Seminar

Every year in December, we hold the GS1 Japan Annual Seminar meeting at the Meiji Kinenkan reception hall, which is usually attended by more than 300 people from various organisations and companies.

At the meeting, industry leaders give special speeches and annual awards are presented to organisations and persons who made outstanding contributions.

Unfortunately, the event was cancelled in FY 2020, due to the COVID-19 pandemic.

3.9.2 Mobile Seminar 2020

To promote GS1 standards in B2C environments, GS1 Japan has been holding seminars for several years. These seminars are widely supported by various industrial bodies, including Japan Retailers Association (JRA), National Supermarket Association of Japan (NSAJ), Japan Automatic Identification Systems Association (JAISA), Mobile Computing Promotion Consortium (MCPC), Mobile Content Forum (MCF), and Japan Academic Society of Direct Marketing (JASDM).

Mobile Seminar 2020 was held on 23 October 2020. Attended by 84 representatives from retailers, manufacturers, and online sellers, the event was held online due to the COVID-19 pandemic.

The theme of this seminar was 'Business Innovation 2020 in an Omni-Channel Environment with GS1 Standards'. We offered the following three speeches at the event.

- Logistics services related to e-commerce and endeavours in the context of the COVID-19 pandemic
Mr. Takashi TAKAYAMA (Scroll360 Corporation)
- TDN's solution for product safety using the GS1 QR code (refer to 1.4.1)
Mr. Yoshiaki WATANABE (TDN International Ltd.)
- GS1 standards
Mr. Hideki ICHIHARA (GS1 Japan)

The seminar proved a great success. The participants learnt about the latest business practices as well as the importance of GS1 standards in the context of the COVID-19 pandemic. GS1 Japan will continue holding such seminars to help promote GS1 standards.

Figure 3.9.2-1 Seminar speakers



3.9.3 EPC RFID FORUM

GS1 Japan and the Auto-ID Laboratory Japan (Keio University) have jointly hosted this periodic forum, aiming to promote the widespread use of EPC/RFID and to encourage its appropriate usage.

The forum was cancelled due to the COVID-19 pandemic in FY 2020; however, we have decided to hold the 16th forum via Zoom Webinar in September 2021. Reports on RFID pilot studies conducted by the Ministry of Economy, Trade and Industry (METI) in 2020 will be the main theme, and participants in each pilot will be invited to give lectures.

3.9.4 RETAILTECH JAPAN 2021

RETAILTECH JAPAN is an annual 4-day trade show that is held by Nikkei Inc., which specialises in retail information systems. GS1 Japan supports the show as a special collaborator.

With more than 200 exhibitors demonstrating their cutting-edge retail information technologies, which range from POS registers to in-store promotion devices, RFID/IC tags, backyard systems and logistics, these shows generally attract over 130,000 visitors.

Held during the COVID-19 pandemic, RETAILTECH JAPAN 2021 (9 to 12 March 2021) was still attended by more than 120 exhibitors and some 35,000 visitors.

3. Community engagement and standards implementation

GS1 Japan set up a joint booth with the 'Supply Chain Standards Management and Promotion Council' to actively promote Ryutsu BMS and GS1 standards (refer to 3.2).

In the seminar zone that we set up inside the booth, we held mini-seminars on GS1 standards and offered members of the GS1 Japan Partners program an opportunity to promote their solutions.

Due to the impact of COVID-19, the exhibition was smaller than usual, but those that attended were grateful to have enough time to ask questions directly.

Figure 3.9.4-1 GS1 Japan booth



4. About GS1 Japan

4.1 Overview

GS1 Japan was originally founded in 1972, mainly through the efforts of the then Ministry of International Trade and Industry (now the Ministry of Economy, Trade and Industry [METI]) as the Distribution System Research Institute (DSRI), a non-profit organisation for promoting the introduction of distribution systems. Since then, we have been striving to rationalise and increase the efficiency of supply chains. For our first mission, we conducted studies into the standardisation of national product codes for apparel and groceries. We began working to develop a system of standard product codes and symbols for Japanese industries by s In 1978, we were accepted as the first non-European member of the EAN Association.

In the latter half of the 1970s, we paved the way to adopting the EAN system in Japan, starting with the incorporation of EAN symbols in the Japanese Industrial Standards (JIS). The feasibility of source marking was tested with the cooperation of Kikkoman Corporation (a soy sauce manufacturer), Coca-Cola (Japan) Company, Limited, and Kai Corporation (a cutlery manufacturer), while retailers began conducting store-front practical demonstrations of the POS system.

In the 1980s, Jusco Co., Ltd. (now AEON Co., Ltd.), Co-op supermarkets, and other retailers conducted pilots of the POS system. We held many seminars on the EAN system and the POS system throughout Japan with the aim of encouraging stakeholders to adopt source marking.

One of the most remarkable milestones in expanding the use of source marking was the adoption in 1982 of the POS system by SEVEN-ELEVEN JAPAN CO., LTD., a leading convenience store chain, at all of its stores (1,650 at the time, but this number had increased to about 21,200 by 2021). Another remarkable contribution to the widespread adoption of the POS system was the introduction of consumption tax in 1989. As our next step, we established study groups for selected industries in the 1980s to study business process improvements together with members of various industries. Members of the processed foods, sporting goods, consumer electronics, and books and

magazines industries participated positively in the study groups. The study group for wholesalers was established under the leadership of representatives from various industries. These study groups soon began cooperating in the adoption of EAN standards.

In the mid-1980s, we launched the JAN Item Code File Service (JICFS; refer to 2.3), which contains cleaned and proofed product data that is useful in the collection and provision of POS data.

During the 1990s, we studied product codes, EDI messages, and other matters in cooperation with the apparel industry under a METI-funded study of the quick response (QR) system. Retailers used to assign their own proprietary codes to apparel products. Together with members of the apparel industry, we studied a way of encouraging the use of EAN source marking for apparel products. This proved to be a success. Another notable accomplishment was the adoption of GS1-128 for the labelling of wooden crates containing various products for delivery to department stores. We then successfully developed the Japan EDI for Commerce Systems (JEDICOS), which is a standard for Japanese EDI messages, based on EANCOM to comply with Japanese business practices.

In the 2000s, a new business model was established in Japan that involved convenience stores acting as agencies for the receipt of public utility payments from customers. As a tool for realising this service, GS1-128 was adopted for public utility bills. Furthermore, the meat industry also decided to adopt GS1-128 for its standard labels for traceability. A means of identification is necessary not only for physical products but also for non-physical products.

In the latter half of the 2000s, GTINs were being employed to identify non-physical music streaming services, and online and mail-order companies began using GTINs for the identification and management of their products.

4.1.1 EPC/RFID

Between 2003 and 2009, we supported METI's RFID pilot projects aimed at identifying and resolving issues related to the introduction of

RFIDs in various industries (apparel, footwear, books, home appliances, international logistics, etc.). These efforts led to us building a foundation for the promotion of EPC/RFID.

Following our establishment of EPCglobal Japan in 2004, we have been actively developing industry awareness of EPC/RFID as well as striving to increase the number of members.

4.1.2 Healthcare

In 2009, GS1 Healthcare Japan was established as a voluntary group for the promotion of GS1 standards in the healthcare sector. We can confidently state that our founding of GS1 Healthcare Japan can be traced back to all of our ongoing efforts, including the issuing of guidelines that illustrate how GS1 systems can be applied to medical device management, and all

of the other pioneering efforts that we have conducted in collaboration with healthcare industry stakeholders since the late 1990s.

4.1.3 New developments

In the area of EDI, we have created an XML-format EDI standard (Ryutsu BMS) that supports domestic business practices and we have been working to promote the use of this standard together with 49 trade organisations. In addition to the above, we have initiated the following new developments.

In 2015, we launched GS1 Japan Partners (refer to 3.1) with the aim of sharing information and best practices among solution providers.

In 2017, we hosted the GS1 Asia Pacific Regional Forum in Tokyo, which was attended by more than 80 people from GS1 GO and 18 AP MOs.

4.2 GCP allocation by GS1 Japan

GS1 Japan joined GS1 in 1978 and obtained the GS1 prefixes '490 - 499'. We subsequently applied for additional prefixes in 1992, obtaining the prefixes '450 - 459'.

Initially, we were allocating seven-digit GCPs (GS1 Company Prefixes), but since January 2001, we have started to allocate nine-digit GCPs, given the diffusion of GTIN usage rise and a recommendation from GS1.

August 2021, GS1 Japan enforced the major revision of the GCP registration and renewal system and the fee structure for the first time in 40 years. Among others, the GCP renewal cycle changed from every three years to one year renewal or confirmation of registered information such as the address. The 10-digit GCP codes allocation as follows is one of the content of this revision.

In recent years, there has been an increasing number of small businesses such as sole proprietorships applying for their GCPs, but they use only a few numbers of GTINs for selling their products on online malls. Therefore, we had started to allocate 10-digit GCP codes in order for the limited amount of GCP assets to be utilised more efficiently. Currently, we allocate nine- or 10-digit GCPs to new applicants in principle.

In FY2020, there were 15,020 new licensees with about 30% increase over the 11,625 in FY2019. The main reason for this could be COVID-19

pandemic, and we believe there are two major trends behind as follows;

- There are quite a few sellers selling daily necessities such as face masks, disinfectant products, and hygiene products on online shopping sites, which are in high demand attributable to COVID-19 pandemic.
- Ordinary brick and mortar shops opened their virtual shops in EC malls with GTINs on their products to meet the market demand for better home experience, and to cover their sales decline.

As of the end of August 2021, the number of GCP licensee reached 145,580.

Recently, number of sole proprietor licensee is increasing, accounting for around 32% of new licensees in the FY 2020.

The top product categories handled by new licensees in the FY 2020 are as follows.

1) Sundries (26%), 2) Processed foods (16%), 3) Fresh foods (7%), 4) Health foods (6%), 5) Apparel (5%).

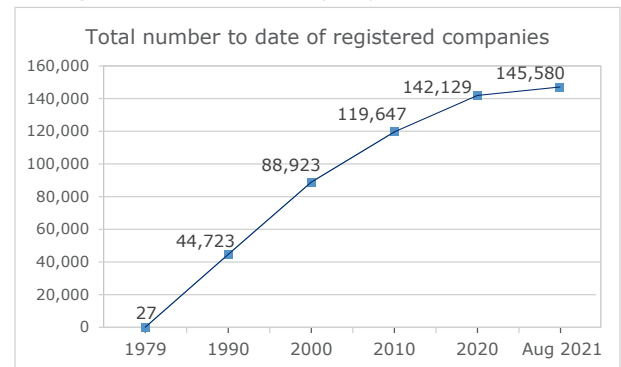
More than a quarter of the businesses selected sundries, as the primary category, and half of which are sole proprietorships. 85% of them obtained GCP to open a shop in EC mall.

In addition, while the percentage was not so high, healthcare products had also been securing steady figures since 2009.

This is partly because the Ministry of Health, Labour and Welfare (MHLW) is promoting the labelling of GTINs and other information on medical devices and medical supplies with GS1 barcodes in addition to ethical drugs, which already have GS1 barcodes.

The number of GCP licensee in Japan is expected to grow continuously, given the expansion of online sales channels and the increase of source marking in areas with previously low source marking rates, such as apparel and specialty products.

Figure 4.2-1 GS1 Company Prefix allocation



4.3 History

Year	Events
1972	DSRI (Distribution Systems Research Institute) is established. (Shinagawa-ward)
1973	'Supply Chain Information Network Models' is developed.
1974	'Standardised Transaction Code' study is conducted by industry types. 'Distribution & System' (quarterly journal) first issue is published.
1975	'Distribution System Design Engineer Course' and 'Distribution System Management Course' are started.
1977	'Distribution Information System Study Committee' is started. 'Distribution Code Centre' is opened. (predecessor of GS1 Japan) Allocation of 'Common Supplier Codes' is started.
1978	Joins 'EAN International' and GS1 Prefix '49x' is allocated. EAN/UPC symbol is defined as a JIS standard (JIS B 9550). Allocation of 'GS1 Company Prefix' starts.
1979	First POS pilot is conducted at a supermarket in Tokyo (Tatsumi Chain, Tokyu Store).
1980	'JCA (Japan Chain Stores Association) Protocol' for Retail industry is defined. Second POS pilot is conducted at some selected supermarkets (AEON, Co-op Supermarket, etc.)
1981	Third POS pilot is conducted at some selected retailers (Kasmi Convenience Store (now called: United Supermarkets Holdings Inc.), Kishi Shopping Center (now called: Watahan & Co., Ltd.), etc.).
1982	'DCC Japan Newsletter' (later, the name changed to 'RYUKAI Centre News' (Bi-monthly)) is first published. SEVEN-ELEVEN JAPAN (Convenience Store) has introduced POS. Moves office to another location in Shinagawa-ward.
1983	'Low-interest financing for POS introduction' is provided to SME retailers by the government (Small and Medium Enterprise Agency). 'Study Group for Information System in Food, Beverage, and Alcohol Industry (called F-KEN)' is started.
1985	'Study Group for ICT-Oriented Wholesale Industry (called OROSHI-KEN)' is started. Ryutsu POS Database Service (RDS) Project is started. JICFS (Jan Item Code File Service) Project is started. Ito-Yokado (GMS) has introduced POS.
1987	Sporting Goods Information System Study Group has started. 'Common Magazine Code' registration has started. ITF symbol is defined as a JIS standard (JIS X 0502). Utility bills collection service system using multiple EAN-13 symbols has started.
1988	Practical application experiment of JICFS (JAN Item Code File Service) is started. Standard EOS (Electronic Ordering System) using GTIN-13 is developed. EAN International General Assembly is held in Tokyo. U.P.C. Company Prefix application service is started.
1989	'Consumption Tax' is introduced. Research and pilots of POS are conducted for small retailers located in the shopping street.
1990	Barcoding in Book Industry.
1991	Multi-functional card for regional shopping streets is developed. Daiei (GMS) has employed EAN codes for all the products.
1993	Heiwado (supermarket in Western Japan) has first employed ITF as a retailer.
1995	Acquires additional GS1 Prefix '45x' and started allocating '45x' GS1 Company prefix.
1996	Study for computerisation of trade for perishables is started. Moves office to Minato-ward. Open Business Network (OBN) system is developed. Code-128 is defined as a JIS standard (JIS X 0504).
1997	Heiwado (Supermarket) has begun CRP (continuous replenishment program) with several manufacturers. JEDICOS, Japanese version of EANCOM, has been developed.
1999	GLN utilisation study and verification test are started to realise efficient and effective distribution system for the supply chain.

Year	Events
2001	Nine-digit GS1 Company Prefix has been introduced.
2002	EAN International's Asia Pacific Regional Meeting is held in Tokyo.
2003	GEPiR operation has started.
	EPCglobal subscription has started.
	GS1 Application Identifier is defined as a Japanese Industrial Standard (JIS X 0531).
2004	'EPCglobal Japan' is set up.
2005	MHLW (Ministry of Health, Labour & Welfare) issues a guideline 'Implementation Guideline for Bar Code Labelling of Prescription Drugs', which uses GS1 barcodes.
	Promotion of GTIN has started.
	'DCC Japan' changed name to 'GS1 Japan'.
2006	GTIN is employed for online sales of music products.
	EPCglobal Board Meeting is held in Tokyo.
2007	Ryutsu BMS (Japanese XML-EDI Message Standards) has published.
	GS1 Mobile Conference held in Tokyo.
	'GS1 DataBar Study Group' is set up.
2008	'GS1 Healthcare conference' is held in Tokyo.
	Several Online Shopping companies have started to use JICFS/IFDB.
2009	'Supply Chain Standards Management and Promotion Council' is set up.
	'GS1 Healthcare Japan' is set up.
2010	Verification test of GS1 DataBar utilisation is conducted at some supermarkets.
	Mobile Day Seminar is held in Tokyo.
2011	Mobile Day event held in Tokyo.
	'The Collaborative Council of Manufacturers, Wholesalers, and Retailers' has started.
2012	'GS1 Advisory Council Meeting' is held in Tokyo.
	Changes corporate form to 'General Incorporated Foundation'.
2013	GS1 B2C mobile and omnichannel Seminar are held in Tokyo.
2014	'GS1 Healthcare Japan UDI and Prescription Drug Traceability Seminar' is held in Tokyo.
2015	'GS1 Japan Partners' membership has started.
	'GS1 Company Prefix' application on the web has started.
2017	'Source Marking Guideline for Raw Materials' has published.
	Hosts 'GS1 Asia Pacific Regional Forum' in Tokyo.
2018	'GS1 Japan Scan' app distribution has started.
2019	'GS1 Japan Data Bank' is launched.
2020	'GS1 AIDC standards conformity check guide' has published.
	Moves office to Minami-Aoyama. (Minato-ward: Current location)
	Renewed 'RYUKAI Centre News' design and changed the name to 'GS1 Japan News'.
	Renewed 'Distribution & System' design and changed the name to 'GS1 Japan Review'.
	'GS1 QR Code/GS1-128 Barcode Guidelines for Carton Cases' has published.
2021	'GJDB × scan' app distribution has started.
	'10-digit GCP' allocation has started.
	'GCP one-year-renewal' system has started.
	'Tenbun Navi' app distribution has started.

5. References

5.1 Statistics on Japanese Retail Industry

Table 5.1-1 Number of establishments, number of employees, annual sales of goods and sales floor space. (2016)

	Stores		Annual sales (JPYm)		Employees (*1)	Store space (k sq m)
		Ratio (%)		Ratio (%)		
Department stores and general merchandise supermarkets	1,590	0.16	12,634,774	8.71	330,992	17,936,735
Miscellaneous retail trade, general merchandise (with less than 50 employees)	1,536	0.16	244,574	0.17	11,663	376,657
Dry goods and cloth stores, Bedding stores	14,711	1.49	483,722	0.33	51,131	936,835
Men's clothing	17,419	1.76	1,531,789	1.06	83,324	2,960,425
Women's and children's clothing	64,013	6.46	4,961,255	3.42	322,551	8,860,879
Footwear	10,523	1.06	750,596	0.52	48,953	943,847
Other miscellaneous woven fabrics, apparel, apparel accessories and notions stores	32,709	3.30	2,259,523	1.56	170,047	5,061,745
Grocery	27,442	2.77	20,552,114	14.16	1,025,225	22,364,400
Vegetable and fruit	18,397	1.86	970,860	0.67	84,882	808,690
Meat and poultry	11,058	1.12	728,575	0.50	58,530	322,363
Fresh fish	13,705	1.38	728,352	0.50	56,326	334,111
Liquor	32,233	3.26	1,564,253	1.08	95,169	1,118,052
Confectioneries and bakeries	61,922	6.25	2,392,327	1.65	369,508	1,655,102
Other miscellaneous food and beverage stores	132,479	13.38	14,631,846	10.08	1,280,037	9,250,911
Motor vehicles	83,887	8.47	17,366,166	11.97	565,227	2,982,778
Bicycles	11,207	1.13	240,079	0.17	27,204	667,430
Machinery and equipment (except motor vehicles and bicycles)	46,272	4.67	9,507,282	6.55	271,385	9,241,211
Furniture, fixture and 'tatami' mat	20,138	2.03	1,550,041	1.07	91,251	5,107,010
Household utensil stores	15,225	1.54	450,699	0.31	46,310	742,967
Medicine and toiletry stores	89,453	9.03	12,654,688	8.72	605,676	10,363,924
Farming supply	11,938	1.21	1,626,018	1.12	59,051	1,567,625
Fuel	48,240	4.87	12,123,560	8.36	305,230	539,003
Books and stationery	34,847	3.52	3,157,908	2.18	438,421	3,773,623
Sporting goods, toy, amusement goods and musical instrument	22,347	2.26	2,247,270	1.55	137,588	4,506,737
Camera, watch and spectacles stores	20,175	2.04	1,133,785	0.78	77,848	1,136,958
Stores, n.e.c. (not elsewhere classified)	102,095	10.31	8,340,300	5.75	562,834	21,783,675
Total	990,246	100.00	145,103,822	100.00	7,654,443	135,343,693

✓ (*1): The number of Employees is the total of 'sole proprietors', 'unpaid family employees', 'paid executives', and 'regular employees', thus 'temporary employees' are not included.

(*2): Total and breakdown may not match as the figures include establishments that could not methodically be classified.

The source: Ministry of Economy, Trade and Industry of Japan

<www.stat.go.jp/english/data/e-census/2012/index.html>

Table 5.1-2 Top 30 Wholesalers in Japan (2020) [Unit: JPYm]

2020	2019	Companies	Head office	Annual sales (JPYm)	Growth (%)	Industries
1	1	MEDIPAL HOLDINGS CORPORATION	Tokyo	3,211,125	(1.29)	Pharmaceutical
2	2	Alfresa Holdings Corporation	Tokyo	2,603,169	(3.53)	Pharmaceutical
3	3	Mitsubishi Shokuhin Co., Ltd.	Tokyo	2,577,625	(2.90)	Food
4	5	NIPPON ACCESS,INC.	Tokyo	2,147,209	(0.33)	Food
5	4	SUZUKEN CO., LTD.	Aichi	2,128,218	(3.85)	Pharmaceutical
6	6	KOKUBU GROUP CORP.	Tokyo	1,847,927	(2.31)	Food
7	7	TOHO HOLDINGS CO., LTD.	Tokyo	1,210,274	(4.23)	Pharmaceutical
8	8	KATO SANGYO CO., LTD.	Hyogo	1,104,695	3.90	Food
9	10	ARATA CORPORATION	Tokyo	834,033	4.75	Household items, Medical supplies
10	9	MITSUI FOODS CO.,LTD.	Tokyo	785,700	(4.21)	Food
11	11	TOMOSHIA HOLDINGS CO.,LTD.	Tokyo	732,500	(1.10)	Food
12	12	ITOCHU-SHOKUHIN Co.,Ltd.	Osaka	656,743	(0.68)	Food
13	13	VITAL KSK HOLDINGS, INC.	Tokyo	537,030	(4.53)	Pharmaceutical
14	16	NIHONSHURUIHANBAI CO., LTD.	Tokyo	521,010	0.99	Books, Music, Video, Instruments
15	14	NIPPAN GROUP HOLDINGS, INC.	Tokyo	520,093	(7.20)	Food
16	15	YAMAE HISANO Co., Ltd.	Fukuoka	483,834	(7.33)	Food
17	17	Forest Holdings inc.	Oita	458,554	(2.67)	Pharmaceutical
18	18	TOHAN CORPORATION	Tokyo	424,506	3.98	Books, Music, Video, Instruments
19	19	Starzen Co., Ltd.	Tokyo	349,242	(0.60)	Food
20	24	SHINMEI Co., LTD.	Hyogo	286,707	11.89	Food
21	22	OHKI HEALTHCARE HOLDINGS CO., LTD.	Tokyo	283,753	3.26	Pharmaceutical
22	21	YAMABOSHIYA Co., Ltd.	Osaka	282,437	2.31	Food
23	27	HAPPINET CORPORATION	Tokyo	259,313	11.13	Toy
24	23	ITOCHU Food Sales and Marketing Co., Ltd.	Tokyo	245,827	(8.70)	Food
25	26	HOKUYAKU TAKEYAMA Holdings,Inc.	Hokkaido	239,494	(1.48)	Pharmaceutical
26	29	MARUICHI CO.,LTD.	Nagano	237,873	3.10	Food
27	20	CHORI CO.,LTD.	Osaka	216,233	(34.35)	Textile
28	33	TAKAYAMA CO.,LTD.	Tokyo	206,679	(0.64)	Food
29	39	UCHIDA YOKO CO., LTD.	Tokyo	200,307	21.85	Stationeries & office machines
30	30	PIP CO., LTD.	Osaka	198,470	(5.89)	Household items, Medical supplies

The source: The Nikkei Marketing Journal, 1 September 2021

5. References

Table 5.1-3 Top 25 Retailers in Japan (2020) [Unit: JPYm]

2020	2019	Companies	Business	Annual sales (JPYm)	Growth (%)
1	1	AEON CO., LTD.	Holding Company	8,603,910	(0.00)
2	2	Seven & i Holdings Co., Ltd.	Holding Company	5,766,718	(13.21)
3	4	Amazon Japan G.K. (*2)	Mail-order	2,184,826	25.25
4	3	FAST RETAILING CO., LTD.	Holding Company	2,008,846	(8.38)
-	-	AEON RETAIL Co.,Ltd.	Supermarket	1,967,200	(14.12)
5	5	YAMADA DENKI CO., LTD.	Specialty Shop	1,752,506	8.75
6	6	Pan Pacific International Holdings Corporation	Holding Company	1,681,947	26.57
-	-	Ito-Yokado Co., Ltd.	Supermarket	1,080,934	(8.79)
-	-	WELCIA HOLDINGS CO.,LTD.	Holding Company	949,652	9.37
-	-	WELCIA YAKKYOKU CO.,LTD.	Specialty Shop	866,442	6.93
-	-	SEVEN-ELEVEN JAPAN CO.,LTD.	Convenience Store	850,291	(4.21)
7	10	Bic Camera Inc.	Specialty Shop	847,905	(5.16)
8	11	TSURUHA HOLDINGS INC.	Holding Company	841,036	7.49
9	7	Isetan Mitsukoshi Holdings Ltd.	Holding Company	816,009	(27.09)
-	-	UNIQLO CO., LTD.	Specialty Shop	806,887	(7.57)
10	16	K'S HOLDINGS CORPORATION	Specialty Shop	792,542	(0.71)
11	13	EDION Corporation	Specialty Shop	768,113	4.71
12	15	LIFE CORPORATION	Supermarket	759,146	6.22
13	9	H2O RETAILING CORPORATION	Holding Company	739,198	(17.62)
-	-	United Super Markets Holdings Inc.	Holding Company	694,323	0.39
14	17	Yodobashi Camera Co.,Ltd.	Specialty Shop	693,157	(1.63)
15	18	Valor Holdings Co., Ltd.	Holding Company	565,930	(16.54)
16	19	Nitori Holdings Co., Ltd.	Holding Company	608,131	(5.32)
-	-	Don Quijote Co., Ltd.	Specialty Shop	666,052	(5.50)
17	21	COSMOS Pharmaceutical Corporation	Specialty Shop	557,999	(8.69)
18	8	Takashimaya Co., Ltd.	Departmental Store	912,848	(0.68)
19	12	Izumi Co., Ltd.	Supermarket	732,136	(1.64)
20	14	Lawson, Inc.	Convenience Store	700,647	(4.05)
21	20	Sundrug Co.,Ltd.	Specialty Shop	588,069	(4.81)
22	23	Sugi Holdings Co., Ltd.	Holding Company	602,510	11.17
-	-	MAXVALU NISHINIHON CO., LTD.	Supermarket	274,937	(49.37)
23	26	ARCS COMPANY, LIMITED	Holding?company	556,946	7.27
24	22	Matsumotokiyoshi Holdings	Specialty Shop	556,907	(5.70)
25	25	SHIMAMURA Co.,Ltd.	Specialty Shop	543,560	3.95

✓ (*1): Companies with a hyphen (-) in the rank column are consolidated subsidiaries whose parent companies are listed on the top 500 list.

(*2): The total annual sales is calculated using the annual average exchange rate.

The source: The Nikkei Marketing Journal, 28 July 2021

Table 5.1-4 Top 8 Convenience Store Chains in Japan (2020) [Unit: JPYm]

2020	2019	Shop Names	Companies	Groups	Annual sales (JPYm)	Shops
1	1	7-Eleven	SEVEN-ELEVEN JAPAN CO.,LTD.	Seven & i Holdings Co., Ltd.	4,870,600	21,167
2	2	FamilyMart	FamilyMart Co.,Ltd.	FamilyMart UNY Holdings Co., Ltd.	2,764,300	15,725
3	3	LAWSON	Lawson, Inc.	Mitsubishi Corporation	2,543,300	14,476
4	4	MINI STOP	MINISTOP Co., Ltd.	AEON CO., LTD.	290,900	1,999
5	5	Seicomart	Secoma Company Limited	Independent	183,700	1,170
6	6	Daily YAMAZAKI	YAMAZAKI BAKING CO.,LTD.	Independent	152,000	1,393
7	7	NewDays	JR East Retail Net Co.,Ltd.	East Japan Railway Company	66,000	496
8	8	POPLAR, SEIKATSU SAIKA, Kurashi House, Three Eight	POPLAR. CO., LTD	Independent	34,500	368

- ✓ This survey was conducted with chain convenience stores which meet the following four criteria: (1) self-service, (2) food and beverage, (3) open at least 14 hours a day, and (4) have a sales floor area of at least 30 square meters but less than 250 square meters. In addition, this year's survey targeted companies that meet the following criteria: (5) total shop sales of at least 10 billion yen and (6) excluding (area) franchisee companies.

Overseas stores are excluded.

The source: The Nikkei Marketing Journal, 18 August 2021

5. References

Table 5.1-5 Top 25 Speciality Store Chains in Japan (2020) [Unit: JPYm]

2020	Companies	Business Areas	Sales		Ordinary Income (JPYm)	Stores
			2020	Growth (%)		
1	YAMADA HOLDINGS CO., LTD.	Home electrical appliances	1,752,506	24.69	98,875	12,290
2	WELCIA YAKKYOKU CO.,LTD.	Chemists & Medicines	866,442	6.93	44,963	1,899
3	UNIQLO CO., LTD.	Casual clothing	806,887	(7.57)	-	813
4	K'S HOLDINGS CORPORATION	Home electrical appliances	792,542	11.91	56,747	519
5	Yodobashi Camera Co.,Ltd.	Home electrical appliances	731,865	3.87	49,342	23
6	Nitori Holdings Co., Ltd.	Furniture	716,900	11.62	138,426	661
7	Don Quijote Co., Ltd.	General warehouse stores	704,047	(0.11)	25,794	339
8	EDION Corporation	Home electrical appliances	698,596	4.36	26,429	1,127
9	COSMOS Pharmaceutical Corporation	Chemists & Medicines	684,402	11.99	31,544	1,058
10	Sugi Holdings Co., Ltd.	Chemists & Medicines	602,510	11.17	35,333	1,391
11	Matsumotokiyoshi Holdings Co., Ltd.	Chemists & Medicines	556,907	(5.70)	34,091	1,764
12	SHIMAMURA Co.,Ltd.	Women's and children's clothing	537,617	3.99	39,149	2,154
13	Daiso Industries Co., Ltd.	100-yen shops	526,200	4.93	-	3,620
14	Cainz Co., Ltd.	DIY stores & Motor car accessories stores	473,407	10.13	34,927	226
15	BICCAMERA INC.	Home electrical appliances	460,501	(10.77)	627	45
16	Trial Company ,Inc.	General warehouse stores	456,186	6.62	6,797	263
17	Joshin Denki Co.,Ltd.	Home electrical appliances	443,696	8.11	13,642	210
18	TSURUHA HOLDINGS INC.	Chemists & Medicines	436,381	-	26,971	1,253
19	Sundrug Co.,Ltd.	Chemists & Medicines	412,960	0.09	24,552	-
20	KOHNAN SHOJI CO., LTD.	DIY stores & Motor car accessories stores	397,622	16.70	29,098	397
21	FUJI YAKUHIN CO., LTD.	Chemists & Medicines	394,346	(0.64)	-	1,380
22	KOMERI Co.,Ltd.	DIY stores & Motor car accessories stores	371,228	10.72	28,199	1,208
23	cocokara fine Inc.	Chemists & Medicines	366,440	-	12,815	1,461
24	GEO HOLDINGS CORPORATION	Secondhand shop	328,358	7.64	4,795	1,956
25	CREATE SD.CO.,LTD.	Chemists & Medicines	316,249	11.25	17,170	625

The source: The Nikkei Marketing Journal, 11 August 2021

Table 5.1-6 Sales by Type of Merchandise in Department Stores (2020) [unit: JPYk]

	2019	2020	Growth (%)	Ratio (%)
Apparel	1,683,368,867	1,140,999,801	(32.22)	27.04
Men's	364,325,084	248,038,753	(31.92)	5.88
Women's	1,079,109,870	719,257,852	(33.35)	17.04
Children's	127,115,455	92,328,824	(27.37)	2.19
Others	112,818,458	81,374,372	(27.87)	1.93
Personal items	767,274,225	550,466,686	(28.26)	13.04
Accessories	1,154,423,193	785,805,154	(31.93)	18.62
Cosmetics	571,378,903	345,334,719	(39.56)	8.18
Jewelleries	386,091,749	294,854,581	(23.63)	6.99
Others	196,952,541	145,615,854	(26.07)	3.45
Household Items	229,737,829	178,007,673	(22.52)	4.22
Furniture	62,441,370	46,490,607	(25.55)	1.10
Home electrical appliances	15,196,500	13,938,677	(8.28)	0.33
Others	152,099,959	117,578,389	(22.70)	2.79
Foods	1,591,521,903	1,319,345,203	(17.10)	31.26
Fresh foods	296,975,928	264,366,880	(10.98)	6.26
Confectioneries	456,654,989	360,164,160	(21.13)	8.53
Delicatessen	356,000,987	292,108,939	(17.95)	6.92
Others	481,889,999	402,705,224	(16.43)	9.54
Restaurant	147,004,618	83,824,946	(42.98)	1.99
Services	58,929,144	41,487,516	(29.60)	0.98
Others	122,455,185	120,488,246	(1.61)	2.85
Grand total	5,754,714,964	4,220,425,225	(26.66)	100.00
Gift Vouchers	130,282,481	103,335,161	(20.68)	2.45

✓ The sales of Gift Vouchers are excluded from the total sales.

The source: Japan Department Stores Association <www.depart.or.jp/store_sale/>

Table 5.1-7 Sales by Type of Merchandise in Chain Stores (2020) [Unit: JPYm]

	2019	2020	Growth (%)	Ratio (%)
Foods	8,218,471	8,746,573	6.43	68.55
Agricultural products	1,152,739	1,272,287	10.37	9.97
Livestock products	960,305	1,062,036	10.59	8.32
Fishery products	727,638	801,702	10.18	6.28
Delicatessen	1,050,863	1,057,582	0.64	8.29
Other foods	4,326,923	4,552,964	5.22	35.68
Apparel	879,726	749,786	(14.77)	5.88
Men's	161,140	132,058	(18.05)	1.03
Women's	239,397	188,593	(21.22)	1.48
Other apparels	479,188	429,134	(10.45)	3.36
Household items	2,508,991	2,529,164	0.80	19.82
Sundries	968,823	989,856	2.17	7.76
Healthcare & cosmetics	339,658	343,723	1.20	2.69
Furniture & interior accessories	705,622	727,076	3.04	5.70
Home electrical appliances	108,608	105,633	(2.74)	0.83
Other products	386,277	362,874	(6.06)	2.84
Services	30,458	28,555	(6.25)	0.22
Others	794,827	705,639	(11.22)	5.53
Total	12,432,474	12,759,718	2.63	100.00

The source: Japan Chain Stores Association (56 member companies and 10,621 stores)

<www.jcsa.gr.jp/public/statistics.html>

Table 5.1-8 BtoC EC market size in Japan (2020) [Unit: JPYb]

		2019	EC Ratio (%) (*1)	2020	EC Ratio (%)	Growth (%)
Retail	Foods, beverages, liquors	1,823	2.89	2,209	3.31	21.15
	Home electrical appliances, audio & visual equipment, PC & peripherals	1,824	32.75	2,349	37.45	28.78
	Books, video & music software	1,302	34.18	1,624	42.97	24.72
	Cosmetics, healthcare	661	6.00	779	6.72	17.81
	Household items, furniture, interior accessories	1,743	23.32	2,132	26.03	22.33
	Apparels & accessories	1,910	13.87	2,220	19.44	16.25
	Motor vehicles, motorbike, parts etc.	240	2.88	278	3.23	16.00
	Office supplies, stationeries	226	41.75	-	-	-
	Others	323	0.92	642	1.85	16.99
	Total	10,051	6.76	12,233	8.08	21.71
Services	Travel	3,897		1,549		(60.24)
	Food & drinks	729		598		(18.04)
	Tickets	558		192		(65.56)
	Financing	591		669		13.18
	Beauty & barber	621		623		0.31
	Food delivery	-		349		-
	Others (Healthcare, insurances, homes, educations)	771		604		-
Total	7,167		4,583		(36.05)	
Digital Contents	e-publication (Books & magazines)	336		456.9		35.98
	Charged music distribution	71		78.3		10.28
	Charged movie distribution	240		320		33.33
	On-line games	1,391		1,496		7.53
	Others	104		110.5		6.25
Total	2,101		2,461		17.15	
Grand Total		19,319		19,278		(0.21)



The 'EC Ratio' means the ratio of EC market size to the amount of business transaction (Market size) including telephone, e-mail, and face-to-face based sales.

The source: METI (Ministry of Economy, Trade and Industry) 'Research on Infrastructure Development in Japan's Information-based Economy Society (E-Commerce Market Survey)'

<www.meti.go.jp/policy/it_policy/statistics/outlook/ie_outlook.html>

Table 5.1-9 Top 25 E-Commerce (B2C) Players in Japan (2019) [Unit: JPYm]

2019	2018	Companies (Main Website)	Sales	Growth (%)	EC Ratio (%)	Main Products
1	1	Amazon Japan G.K. (amazon.co.jp) (*1)	1,744,300	14.10	100	General
2	2	Yodobashi Camera Co.,Ltd (yodobashi.com)	138,559	14.30	100	Home electrical appliances
3	3	ZOZO, Inc. (zozo.jp)	125,517	6.00	100	Apparel
4	4	BICCAMERA INC. (biccamera.com) (*2)	108,100	25.70	100	Home electrical appliances
5	5	UNIQLO CO., LTD. (uniqlo.com)	83,200	32.00	100	Apparel
6	11	Dell Japan Inc. (dell.com)	(*10)63,000	-	100	PC
7	22	Oisix ra daichi Inc. (oisixradaichi.co.jp) (*3)	61,340	8.00	100	Foods
8	8	Dinos Cecile Co., Ltd. (dinos.co.jp & cecile.co.jp)	(*9)58,165	1.90	60	General
9	9	Japanet Takata Co.,Ltd. (japanet.co.jp/shopping)	(*10)58,000	2.00	28	Home electrical appliances
10	7	Joshin Denki Co.,Ltd. (joshinweb.jp)	57,134	4.80	100	Home electrical appliances
11	10	Senshukai CO.,LTD. (bellemaison.jp)	(*9)(*10)49,000	-	80	General
11	14	Jupiter Shop Channel Co.,Ltd. (shopch.jp)	(*10)49,000	-	30	General
13	12	ASKUL Corporation (askul.co.jp)	48,620	-5.40	100	Household items
14	17	MouseComputer Co.,Ltd. (mouse-jp.co.jp) (*4)	47,015	17.70	100	PC
15	13	Ito-Yokado Co., Ltd. (itoyokado.co.jp) (*5)	45,160	6.10	100	Foods
16	15	KITAMURA Co., Ltd. (kitamura.jp) (*6)	(*10)45,000	-	100	Cameras
16	21	YAMADA DENKI CO., LTD. (www.yamada-denkiweb.com)	(*10)45,000	-	100	Home electrical appliances
18	18	NITORI Co., Ltd. (nitori-net.jp/store)	44,300	14.60	100	Furniture, household items
19	16	MOA Co.,Ltd. (premoa.co.jp) (*7)	37,133	21.70	100	Home electrical appliances
20	20	QVC Japan, Inc. (qvc.jp)	(*10)33,600	-	30	General
21	19	Belluna Co., Ltd. (belluna.jp) (*8)	30,154	-8.00	24	General
22	23	IRIS OHYAMA Inc. (irisplaza.co.jp)	(*10)30,000	-	100	Household items
23	44	BAYCREW'S STORE (baycrews.jp)	28,400	40.50	100	Apparel
24	29	ORBIS Inc.(orbis.co.jp)	25,667	3.80	51	Cosmetics, healthy foods.
25	45	ONWARD CROSSET (crosset.onward.co.jp)	25,308	30.60	100	Apparel

✓ (*1) Amazon Japan: Amazon's sales in Japan, including other businesses other than product sales.

(*2) Bic Camera: Consolidated group net sales including Kojima and Sofmap.

(*3) Oisix La Daichi: Includes some catalogue and other sales.

(*4) MouseComputer: Includes store sales etc.

(*5) Ito-Yokado: Mainly their online supermarket sales.

(*6) KITAMURA: EC related estimated sales including home delivery and in-store-pick-up sales.

(*7) MOA: Includes wholesale business.

(*8) Belluna: Sum of both general and specialised mail-order business.

(*9) Sales calculated from the ratio of orders received.

(*10) Estimation

The source: Koubunsuppan Corporation <netshop.impress.co.jp/node/6908>

Table 5.1-10 Number of Vending Machines and Annual sales in Japan (2019) [Unit: JPYk]

Type	Product examples	Sales		Machines in operation		Growth (%)
		2016	2018	2019	2020	
Beverages	Soft drinks	1,740,528,000	2,120,000	2,100,000	2,020,000	(3.81)
	Milk drinks	120,620,000	126,900	111,600	106,000	(5.02)
	Coffee, cocoa (Cup)	137,904,000	154,000	141,400	137,000	(3.11)
	Alcoholic drinks	30,750,000	22,900	22,400	21,600	(3.57)
Total (Beverages)		2,029,802,000	2,423,800	2,375,400	2,284,600	(3.82)
Foods	Instant noodles, frozen foods, ice creams, confectioneries, etc.	54,132,000	72,000	71,900	70,000	(2.64)
Cigarettes	Cigarettes	209,356,000	153,300	131,000	123,000	(6.11)
Thickets	Passenger tickets	1,415,842,000	15,200	15,000	14,500	(3.33)
	Meals, admissions, etc.	410,972,800	43,200	45,400	46,600	2.64
Total (Tickets)		1,826,814,800	58,400	60,400	61,100	1.16
Household items	Prepaid cards, sanitary goods, newspapers, toys, etc.	417,967,500	230,300	210,100	209,000	(0.52)
	Others (Newspapers, sanitary goods, toys, etc.)	52,762,400	-	-	-	-
Total (Household items)		470,729,900	230,300	210,100	209,000	(0.52)
Total (Vending machines)		4,590,834,700	2,937,800	2,848,800	2,747,700	(3.55)
Automated self-service machines	Money changer	-	66,900	66,800	64,400	(3.59)
	Automatic fare adjustment machine (Parking, hotels, hospitals, etc.)	-	157,400	162,500	161,700	(0.49)
	Others (Automatic lockers, lending machines, etc.)	145,200,000	1,073,000	1,071,000	1,072,000	0.09
Total (Automated self-service machines)		145,200,000	1,297,300	1,300,300	1,298,100	(0.17)
Grand total		4,736,034,700	4,235,100	4,149,100	4,045,800	(2.49)

The source: Japan Vending Machine Manufacturers Association [www.jvma.or.jp/information/information_3.html]

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